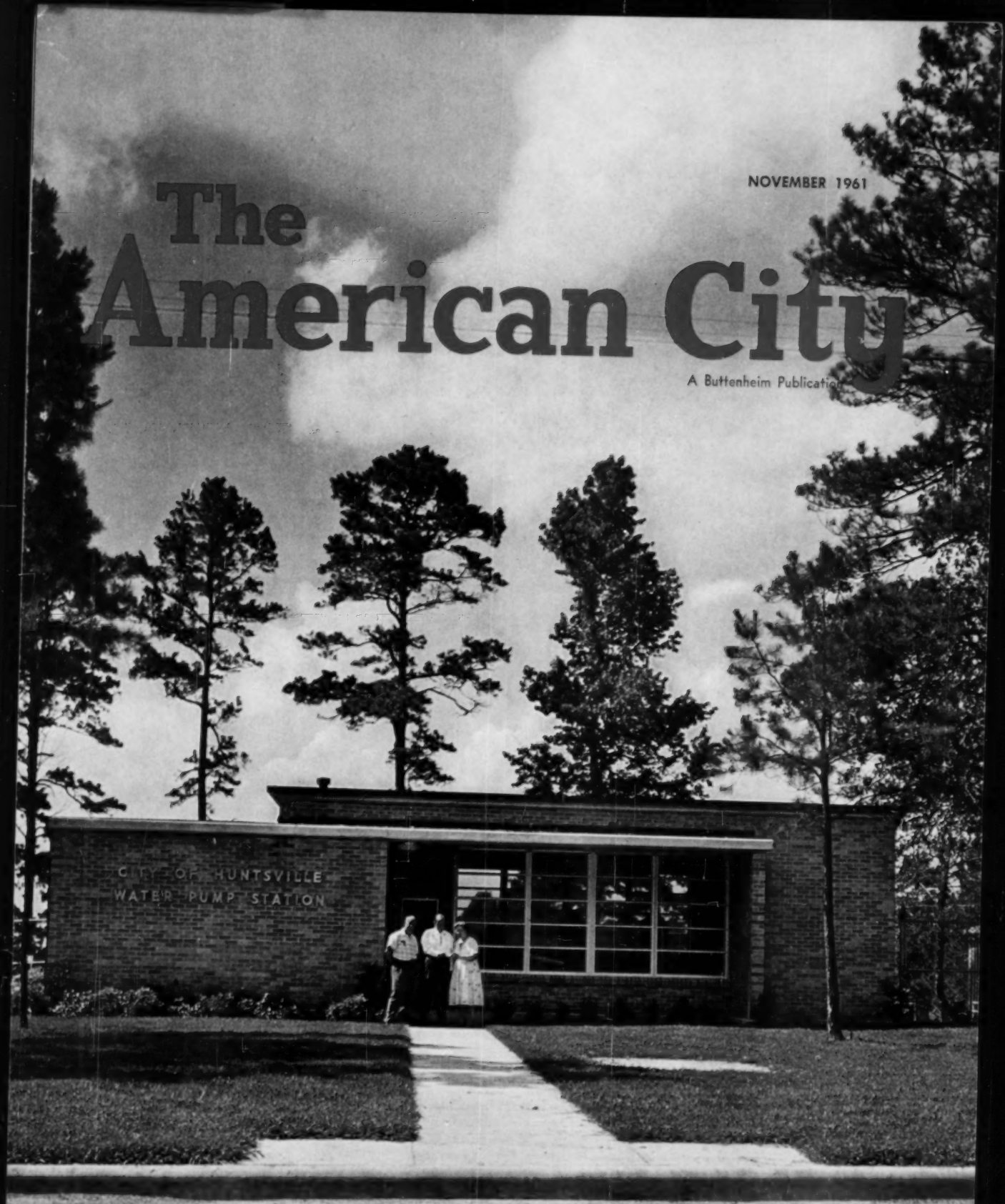
NOVEMBER 1961

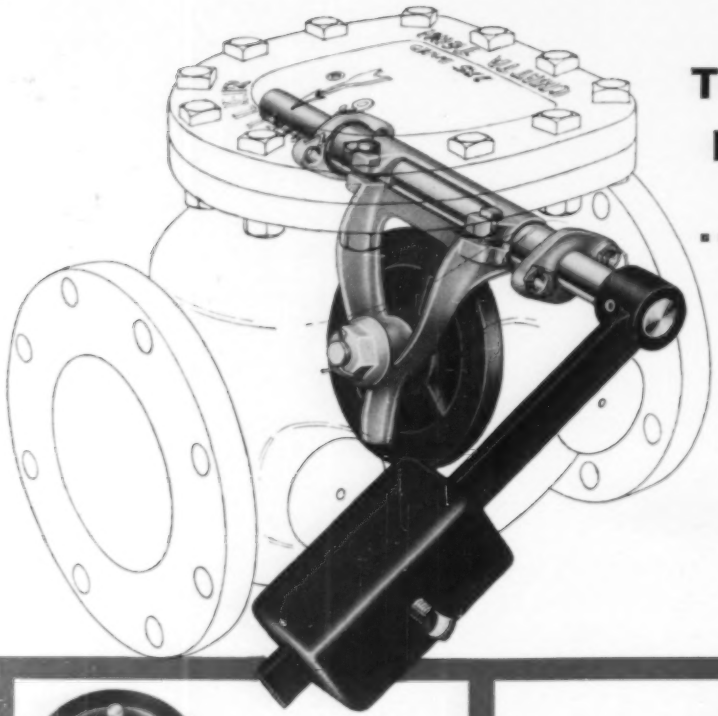
The American City

A Buttenheim Publication



Huntsville, Texas, solves a troublesome water-supply problem by building an attractive plant in a sylvan setting.

See page 3.

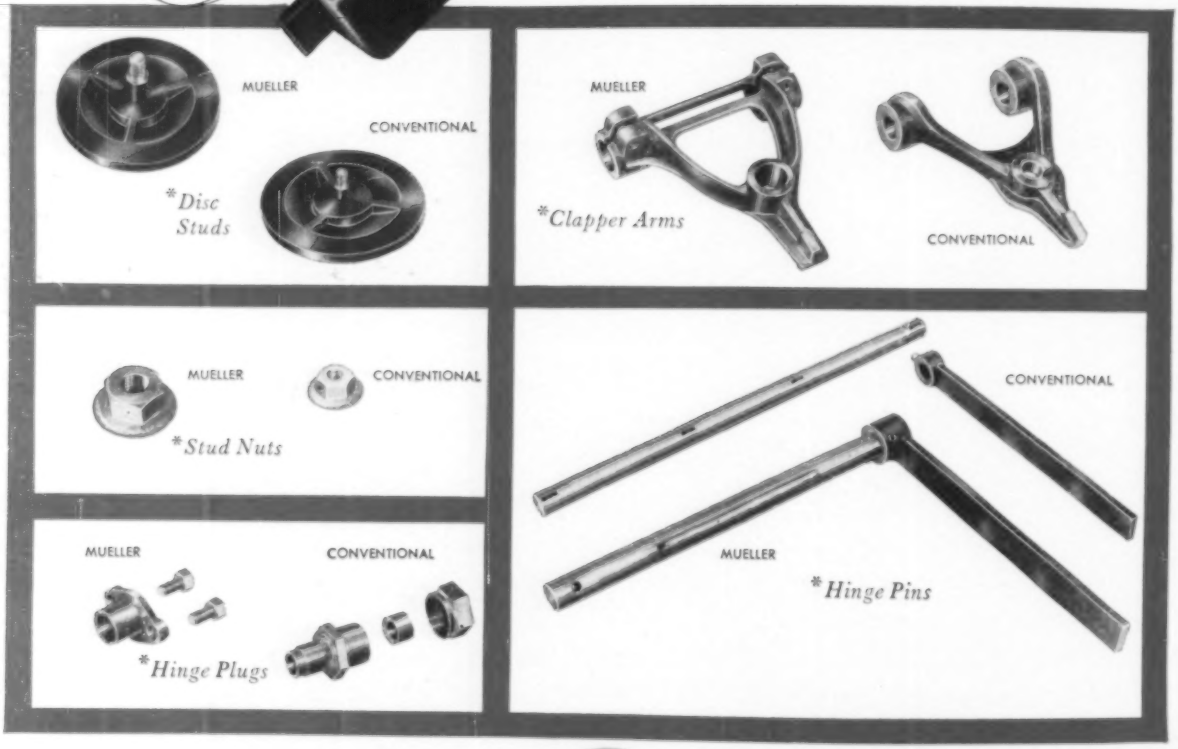


THERE IS A BIG DIFFERENCE*

...and the difference is MUELLER® QUALITY

Compare the parts of a Mueller heavy-duty Check Valve with those of conventional check valves. In each comparison, Mueller parts are either larger, more accurately manufactured or of higher strength materials.

The result is longer service life and more dependable operation without maintenance.



The Heavy-duty Check Valve is typical of the extra care, extra quality built into every Mueller product.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

6165

NOVEMBER 1961

The American City

A Buttenheim Publication

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

ADMINISTRATION, GOVERNMENT AND PURCHASING

Our municipal notebook 13
Pittsburgh's punched cards record everything 106
Minneapolis' new library 120
Municipal public relations 153
The practical side of municipal purchasing 157
Purchasing news 205

STREET CONSTRUCTION AND MAINTENANCE
STREET CLEANING AND SNOW REMOVAL

Asbestos additive improves pavements 9
Try this flusher for size 29
Five men versus 45 minutes 29
The cost of plowing and removing snow 89
Mid-winter pot-hole patching 95
A five-ton crane is a handy thing 110

OUTDOOR LIGHTING

Five to eight footcandles downtown 114
It is safer and more pleasant in Asheville 143
Portland uses fluorescents and mercuries 144
High spots in highway-lighting design 144
Light for fishing 147
Filament for dwellings, mercury for business 151
Cleveland's city hall lights up 151

SEWERAGE AND SEWAGE PURIFICATION

Let's have a picnic—at the sewage plant 25
St. Louis specifies infiltration-proof sewers 25
Largest biofilter plant in the east 96
Modern sewer-service charges, Part II 171

TRAFFIC CONTROL

Cincinnati paints traffic lines on Sunday 100
One street—two intersection problems 135
Measuring skidmarks 137
One tap of the hammer 138
Top traffic measures in Rochester 138
Grooved pavement traffic stripes 141
Traffic problems head for the suburbs 141

REFUSE COLLECTION AND DISPOSAL

Abilene cuts collection costs 27
New incinerator design group 27
How hot is "too hot" in an incinerator? 104

PLANNING, ZONING AND HOUSING

Garden apartments are good 99
Preserve those old trees in new subdivisions 112
Plan or perish 181

PUBLIC SAFETY

Pint-sized jet-powered fire boat 36
Police-car colors match the rainbow 36
Small-community two-way police radio 36

WATER SUPPLY AND TREATMENT

Neoga's water tank first of its kind 33
Chemicals reduce water requirements 33
No chance of water shortage here 92
No more treatment than necessary 108
How to select and install water-works pumps, Part III 117

AIR POLLUTION

Air pollution control news 30

PARKS AND PLAYGROUNDS

Tots fight fires on retired truck 34
Rifle range makes a good neighbor 34
Need for marinas on the rise 34
Waterways need continuous maintenance 102
Keeping Saginaw green 116

MISCELLANEOUS

What a good auditorium needs 165
1961 aid-to-education award 169

DEPARTMENTS

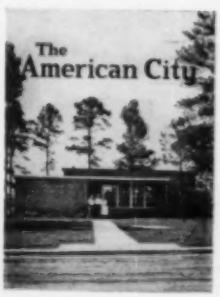
Featured this month 5
Editorial 7
Letters to the editor 30
Free catalogs 41
Zoning and planning decisions 185
Legal notes 191
City managers 193
Conventions: when and where 197
Municipal and civic publications 201
Municipal bond market 203
About people 220
Professional service directory 223

(For index to advertisers see page 234)

The Cover Picture

Mrs. Kate Barr Ross, one of the few feminine water-utility administrators in the nation, inspects the new Huntsville, Texas, water works in its charming, wooded site. With her are Water Superintendent George Baisdon and City Engineer N. B. Davidson.

The plant gains distinction by treatment of a troublesome water, using relatively simple treatment methods. City Engineer Davidson describes it on page 108.



turn on a dime ...get there in time

Maximum maneuverability when you want it—where you want it! Harley-Davidson Police Motorcycles are ready for anything on a moment's notice. Police Solos and Servi-Cars streak to the scene of a crime or accident with unequalled speed. They thread their way through snarls that would stop other types of vehicles in their tracks.

Harley-Davidson Police Motorcycles command the respect of officers. They are comfortable to ride — and are always dependable. More than 55 years of Harley-Davidson motorcycle experience is built into them. Little wonder Harley-Davidson's are the finest police vehicles in the world.

Send for your free copy of the new, completely illustrated Harley-Davidson Police Motorcycle brochure. Address your request to Harley-Davidson Motor Co., Milwaukee 1, Wis., Dept. AC-11.

Stretching the long arm of the law

HARLEY-DAVIDSON *Police Motorcycles*

Volume 76 Number 11

The American City

WILLIAM S. FOSTER, *Editor*
ALDEN W. WELCH, *Research Editor*
ELROY F. SPITZER, *Engineering Editor*
RODNEY R. FLEMING, *Associate Editor*
SHEILA C. MALTON, *New Products Editor*
WILLIAM T. DULAC, *Production Manager*
WILLIAM DE R. TAAFFE, *Asst. Prod. Mgr.*

Editorial and Executive Offices:

470 PARK AVE. SOUTH, NEW YORK 16
MURRAY HILL 5-9250
EDGAR J. BUTTENHEIM
Chairman of the Board
DONALD V. BUTTENHEIM, *President*
GEORGE S. CONOVER, *Vice President*
EDGAR M. BUTTENHEIM, *Publisher*
ARTHUR B. BURGAN, *Assistant Publisher*
G. E. CARNEY, *Treasurer*

Sales Offices:

NEW YORK 16 • 470 PARK AVE. SOUTH
MURRAY HILL 5-9250
MYRON MACLEOD, *Advertising Manager*

CHICAGO 6 • 400 WEST MADISON ST.
FINANCIAL 6-4611
WARNER H. ROBINSON
TED K. ASHMOS

CLEVELAND 14 • 1814 SUPERIOR BLDG.
CHERRY 1-1755

LOOKOUT MOUNTAIN 8, TENN.
121 NORTH HERMITAGE
TAYLOR 1-2853
CURTIS R. BUTTENHEIM
Southern Sales Manager

LOS ANGELES 27 • 1870 HILLHURST AVE.
NORMANDY 5-5143
ALBERT T. MILLER, *Pacific Coast Mgr.*

ORMOND BEACH, FLA.
30 OCEAN CREST DRIVE
FRANK J. RAYMOND

THE AMERICAN CITY is issued monthly by BUTTENHEIM PUBLISHING CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 75 cents. Back copies, $1. Entered as second-class matter July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature. Copyright, 1961, by Buttenheim Publishing Corporation, 470 Park Avenue South, New York 16, N. Y.

ASSOCIATED PUBLICATIONS

CONTRACTORS and ENGINEERS	OVERVIEW
Municipal Index	MART
AMERICAN SCHOOL AND UNIVERSITY	

FEATURED THIS MONTH

► Snow-Plowing Costs per Inch of Snowfall page 89
. . . get spelled out for you this month in precise, easy-to-understand form by Charles J. Cole, Superintendent of Public Works, Kingston, N. Y. He summarizes costs over a seven-year period, separates labor costs from equipment, and describes special problems that confront this snow-belt city.

► Cold-Weather Street Patching page 95
. . . that stays put is the cost-saving feature in the street-maintenance program at Normandy, Mo. The story tells how you can adapt the same sort of practice to your winter maintenance work.

► Old Trees in New Subdivisions page 112
. . . are worth the effort it takes to save them, argues city planner N. J. Spagna, Hollywood, Fla. A study by his department should help you to keep bulldozers from running wild in your new subdivisions.

► Largest Biofilter page 96
. . . sewage-purification plant in the East is now at work at Trenton, N. J. John F. Vogler, municipal engineer for sewers, tells what went into it and why it was selected.

► Sunday Traffic-Line Painting page 100
. . . proved to be the proper way to do a good job in downtown Cincinnati. Public Works Director W. C. Wichman tells what went into the planning and what you can gain by following Cincinnati's example.

► How Hot Is Too Hot page 104
. . . in an incinerator? This is a controversial question that gets a thought-provoking analysis. Read it and decide for yourself.

► Garden Apartments page 99
. . . come under both economic and social analysis in Windsor, Conn., by Town Manager Robert Weiss. His findings should help you set constructive planning policy on this subject for your city.

► Lighting Attracts Tourists page 143
. . . in Asheville, N. C., as well as providing safety and a more pleasant downtown. The economics are an extra plus that should interest you.

► Water-Works Pump Design page 117
. . . gets a clear, meaningful explanation by a pair of experts in the field of engineering design. This is the third installment.

► A Variety of Sewer-Service Charges page 171
. . . comprises Part II of the series begun last month. These examples indicate how 11 cities from California to Pennsylvania and from Florida to Minnesota obtain funds for their sewerage works.

► Punched Cards page 106
. . . that keep track of everything from overdue taxes to water rates come under close scrutiny in Pittsburgh, Pa. The experience here gives guidance on how you can use the same system in your city.

► Next Month
. . . look for the story of a stackless incinerator that doesn't draw attention to its utilitarian and esthetically unattractive duty (**You Don't Need a Tall Stack**). Learn how a resourceful sanitation superintendent uses **wrens and worms** to make his sewage-purification plant work better. Get the details about a new **compact paving repair unit.** Get the benefit of resourceful thinking in a discussion of **"A Fresh Idea in Parking Structure Design."** See how careful, imaginative water-works design produced a plant so that **"One Operator Does Everything."**

These "extras" make BJ Pumps cost less in the long run!

INVENTORIES for fast, out-of-stock delivery of standard model pumps or replacement parts... inventories of materials and manpower to design and build custom-engineered pumps for any purpose... and an inventory of experience since 1872, are all "extras" offered when you buy BJ!

Byron Jackson's nation-wide structure of thirty-eight sales engineering and service offices, plus BJ dealers and representatives in many areas, blanket the Country with on-the-spot assistance, just as BJ's overseas offices and licensees are available internationally.

BJ quality at competitive prices — plus extra services— cost less in the long run!

BJ Sales engineering and service offices are conveniently located wherever, whatever your needs!

BYRON JACKSON PUMPS, INC.
SUBSIDIARY OF BORG-WARNER CORPORATION
P.O. Box 2017 Terminal Annex, Los Angeles 54, California

BYRON B-W JACKSON
BORG-WARNER

Let's Look at the Water "Crisis"

This water-shortage "crisis" ought to be recognized for what it actually is, an impending shortage of sewage-purification facilities, not water resources. And it is going to be solved by what we sometimes call "Valdosta thinking." Let us explain.

Nationally considered, we are by no means short of water if we consider, as water, something that is wet and will flow in a pipe. The confusion arises over the misuse of the term, "water consumption." More nearly correct is "water use." As far as urban areas are concerned, we receive the water from some source, use it, and then discharge practically all of it into the nearest water course.

We *should* discharge this used water, purified sufficiently so that it does not harm the water course as a source of supply for others. Unfortunately, we aren't doing this as well as we should.

Kenneth A. MacKichan, hydraulic engineer with the U. S. Geological Survey, documented how plentiful this supply actually is in the October issue of the *Journal of the American Water Works Association*. He considers water *consumed* if it is lost to evaporation, incorporated into a product, or otherwise made unfit for refuse. On this basis, his figures show that the nation "consumes" 61 billion gallons of water per day —that is, it depletes the supply for immediate use by this amount. By 1980, this depletion may rise to 100 bgd. However, currently we have available for all uses more than 300 bgd and by 1980 we should be able to double this supply.

The trick is, of course, one of cleaning up the waste water so that it will not damage the stream. And the unhappy part of it is that we haven't discovered a way to make either water supply or sewage purification a popular issue at election time. Occasionally water supply enables a city administration to stay in office, and once in a while, sewerage provides a vote-getting issue. But not often.

One of our favorite stories about this has its setting in the little city of Valdosta, Ga. At the time, its water and sewer system was old, creaking and badly in need of improvement. The city engineer mapped out a workmanlike program but pointed out the unhappy fact that it would require an increase both in taxes and water rates.

The mayor told his council that if they voted for these unpopular increases, the odds were strong that none would be reelected. But, he said, the city needs a better water and sewer system. So he urged and they agreed to vote for the good of their city and end their political careers with clear consciences.

Their votes stimulated furious and indignant opposition as they had anticipated. But the happy part of the story is that the voters did *not* do as predicted. Instead, they reelected the mayor and all councilmen who chose to run at the following election.

Unhappily, a number of other city councils haven't been so fortunate. Perry, Fla., completed a water and sewerage program that was badly needed but the voters turned out three of their councilmen at the next election. In Pleasant Ridge, Mich., the entire city commission resigned under fire because of strong public opposition to sewers and a sewage-purification plant. In Malta Bend, Mo., city officials found themselves on the outside looking in when they advocated a public water supply.

One difficulty is that water and sewerage facilities aren't particularly visible after they are completed. This need for a "showpiece" crops up even in our foreign-aid programs. Richard Hazen, consulting engineer, recently told a group of his fellow engineers at a meeting of the American Institute of Consulting Engineers that leaders in underdeveloped countries generally prefer an improvement that their followers could see rather than water lines and sewers that are hidden. He observed that this thinking is common in the United States as well as abroad.

But knowing the difficulty should help us determine how to attack it. Fortunately, good water resources are developing a "showmanship" aspect. We see a number of cities capitalizing on it—displaying their ample supplies of water as one of the principal reasons for growth and attraction to commerce and industry. A few cities have won All-America citations principally for their advances in good water supply.

Now the question remains one of how we can win the same type of citizen support for the important task of protecting these water resources. It is a selling task that cannot be done by the superintendent of sewage treatment alone. For the collective good of the nation's urban areas, it will require all the showmanship that we can master, plus the calculated risk of "Valdosta thinking."

A little, interesting addendum on the subject of municipal showmanship comes from Hollywood, Fla. Everyone agrees on the value of a clean, neat street. But Miss Gitano Dydo apparently feels that they would be even more attractive if they had a greater number of handsome male pedestrians on them.

To attain both these benefits, she suggests that the city hire a staff of attractive young ladies, dress them in pink bathing suits and equip them with rhinestone-studded litter-collecting equipment. She adds that she will be glad to apply for such a job herself.

We may have difficulty adapting Miss Dydo's suggestion directly to the protection of water resources. But we have to admit that she knows how to utilize showmanship imaginatively.

125 Hi-Loaders handle earth, snow, sod at lowest possible cost. Operator controlled swivel conveyor allows loading to either side or to the rear.

Perfect for winter road work, Athey 7-11 Force-Feed Loaders take up just one lane . . . Allow free traffic flow, save spotting time by loading directly to the rear or to either side with optional side discharge conveyor.

year 'round

WORKHORSES

cut maintenance costs!

Athey Loaders meet job requirements all year long . . . load snow, windrowed or stockpiled material faster, more economically than other equipment!

Maintenance costs are kept at a minimum with year 'round Athey Force-Feed Loader equipment. These general purpose loaders handle a multitude of jobs—and do them better than other specialized machines and methods.

Two Athey Loader models—7-11 Force-Feed Loader and 125 Hi-Loader—meet tough road and yard requirements night and day . . . every day . . . 365 days a year! In winter, you'll load snow at up to 20 yards per minute. In summer, your Athey Loader handles heavy materials like gravel, rock, dirt and broken blacktop at up to 10 yards per minute. Don't invest your dollars in part-time equipment. Get the complete details about year 'round Athey Loaders from your Athey-Caterpillar* dealer today or write us direct for new Athey booklet, "Athey Force-Feed Loaders"

Athey

Force-Feed Loaders

*Caterpillar is a registered trademark of Caterpillar Tractor Co.

Athey PRODUCTS CORPORATION • 5631 WEST 65TH STREET • CHICAGO 38, ILLINOIS • DESIGNERS AND MANUFACTURERS OF HEAVY-DUTY LOADING AND HAULING EQUIPMENT

Asbestos additive improves pavements

By adding some asbestos fibers to a bituminous pavement, the New York State Department of Public Works finds a definite improvement in the pavement's resistance to impact and a significant increase in the softening-point temperature.

As a result of laboratory analysis and field observations, the officials also concluded that:

- **The addition of asbestos increased the pavement strength.**
- **Additional experiments will be necessary to determine the optimum mix design; the mere substitution of asbestos for mineral filler adversely alters the consistency.**
- **Continuing observation will be necessary to determine whether the increased cost of the pavement justifies its use because of superior performance and increased life.**

The construction of the Scajaquada Creek Expressway in Buffalo provided the opportunity for this experimental work. The cross section of the pavement included a 12-inch crushed slag foundation course, an 8-inch unreinforced portland cement concrete slab and a 3½-inch asphaltic concrete surface of state specification type 2A. Only the top 1½ inches received the asbestos additive.

Grade 7M, one of the shortest marketed fibers of asbestos, contains about 40% by weight of rock dust which tends to separate the individual asbestos fibers and thus aid their complete dispersal in the mix. This grade is abundant and is one of the most economical forms. Other investigators have found that it performs equally as well as the more expensive long-fibered type.

Three variations of the regular mix provided material for each of the test strips which average 154 feet in length. For convenience the following table of weights lists the stone under one heading although the specification divides it into three parts:

Material	Regular Mix	Mix A	Mix B	Mix C
Stone	1550	1550	1550	1550
Sand	1890	1890	1890	1890
Mineral Filler	260 (6½%)	160 (4%)	160 (4%)	160 (4%)
Asbestos	—	50 (1¼%)	100 (2½%)	50 (1¼%)
Asphalt	300 (7½%)	300 (7½%)	340 (8½%)	340 (8½%)

Mix A experienced slight bulking and balling of the fines. It appeared drier and stiffer, properties which resulted in somewhat more tearing than normal.

Mix B exhibited similar properties and appearance but resulted in greater tearing. Apparently the increase in asbestos was of too great a magnitude for the increase in asphalt content.

Mix C also tore to a greater extent than the regular mix during the laying, but not as badly as mixes A and B.

Static tension tests on the new mixtures yielded results from four to five times higher than those of the standard mix.

Subsequent laboratory impact tests indicated that the asbestos improves this property significar.tly more than does a normal mineral filler. In practice, this should increase the stability of pavements at intersections and bus stops. The increase found in the softening point forecasts that the addition of asbestos should improve pavement characteristics where parked automobiles frequently distort the fine texture of existing mixes. Stability and penetration tests indicated that mixes A and B substantially outperformed the regular type, while Mix C generally showed only modest improvements.

A similar project recently completed in the city of Martinez, Calif., represented the combined efforts of that city, the Asphalt Institute, the University of California, the State Division of Highways and Johns-Manville. The purpose of the test is to determine the strength and durability of various mixes under heavy truck traffic. The complete results of this test are not yet available.

Adding asbestos to asphaltic concrete promises to improve many of the characteristics of this already versatile mixture. However, these tests showed the need for more research, particularly with regard to mix design. ◄◄

WHAT WILL YOU INSIST ON IN YOUR NEXT LOADER?

- ☐ machine availability
- ☐ low, long-term cost
- ☐ high productive capacity
- ☐ simple, easy operation
- ☐ fast, easy servicing
- ☐ high trade-in value
- ☐ reliable dealer service

This 1¼ cubic yard 955H, owned by Polk County, Georgia, can load a 5 yard truck in less than 60 seconds. It could easily truck-load 2200 tons in an 8-hour shift. District Foreman John Davis says the 100 HP 955 is the best rig that he's ever had anything to do with. "And I've been in the business for years," he says. "The 955 loads easily and has plenty of power. We do a lot of digging with it." Like its brothers, the 977 and 933, the 955 has lifetime-lubricated rollers, a rugged undercarriage and a dependable Cat-built diesel engine.

This 2½ cubic yard 977H, owned by Anderson County, South Carolina, is being used to build $1,500,000 of new roads, replacing those closed by the Hartwell Dam in the Barkas Creek section. "Power shift really pays off for us," says John Ashley, County Supervisor, "because we generally don't have a crew with a lot of equipment experience. Our new men get good production out of the 977 in only a few days. We've found out that it's an easy machine to keep in good operating condition, too. That helps stretch our budget."

IF YOU'VE CHECKED 3 OR MORE ESSENTIALS...YOUR BEST BUY IS A CAT LOADER

Matter of fact, if you've checked only one a Cat loader is the answer. Low, long-term cost—so important when you're investing public funds—is an established Caterpillar fact, a record earned by years of low-cost, high-production performance on city, county and private contract jobs. It's a record based on thousands of individual machine cost sheets and detailed performance reports.

On jump-and-run jobs or on 2000-4000 tons/day quarry or excavation assignments, Cat loaders are ready to put in a full shift every day.

There are 3 rugged Traxcavator track-type loaders: the big 2½ yard 977H, the 1¾ yard 955H and the 1⅛ yard 933. The high-production 977 and 955 are equipped with Caterpillar power shift transmissions for instant changes of speed and direction at the easy flick of a lever. Add this to Caterpillar's automatic bucket controls, live-action hydraulics and increased horsepower and you've got the smoothest, fastest-working loaders available.

Functional design and unitized construction make Traxcavator Loaders easy to service; they bounce back on the job quickly . . . and years from now, when you're ready to trade-up to a new model, they'll bring a premium trade-in price.

If you haven't checked that last box ☐ *reliable dealer service*, think about it again. No matter how expert your repair crews are, no matter how reliable your equipment, the services of an alert, responsible dealer are invaluable. Look over your Cat Dealer's facilities. His parts inventories and service bays could save your taxpayers' money.

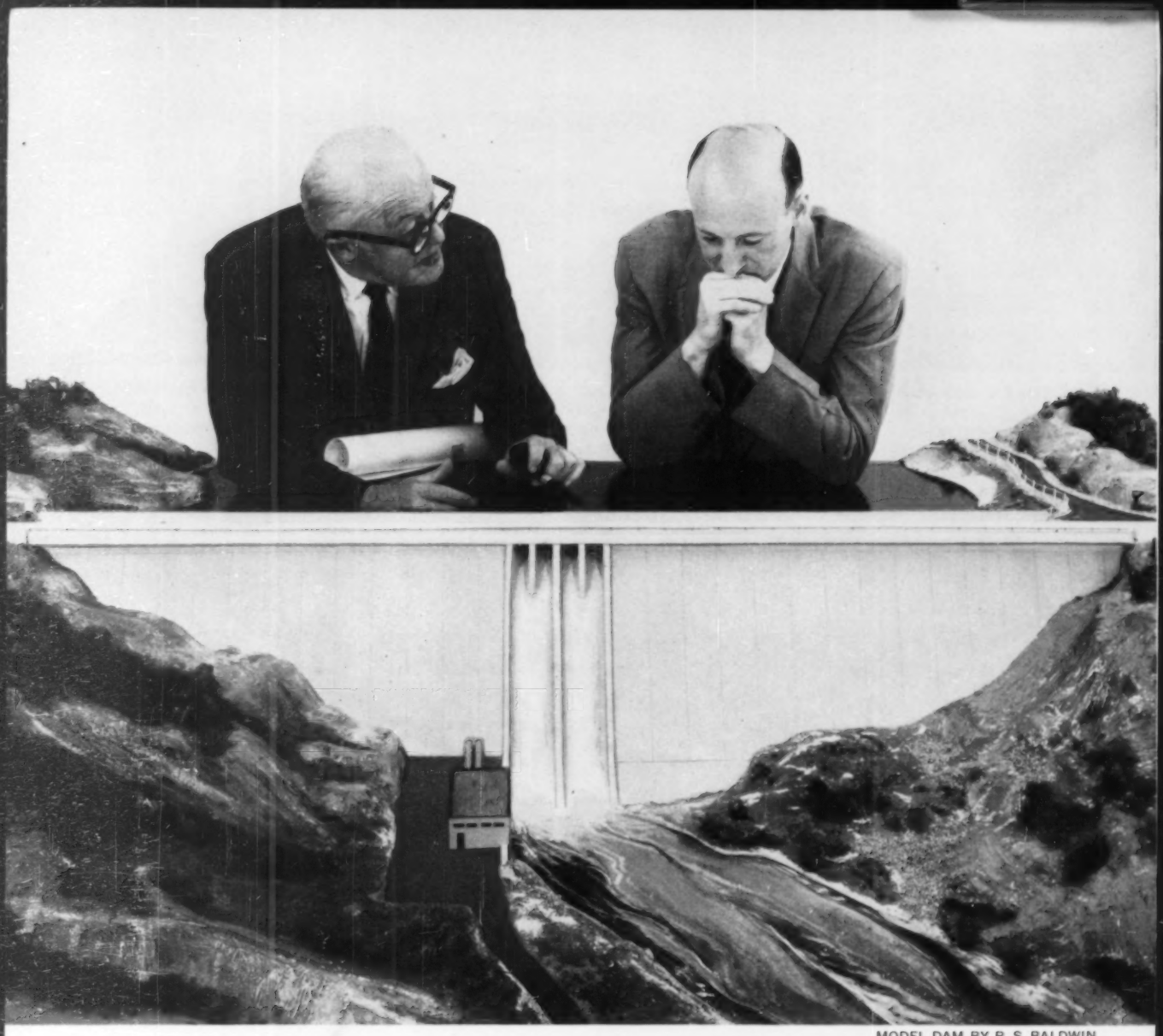
Insist on getting what you *need* in your next loader—and to be sure, see your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

CAT LOADERS STRETCH TAX DOLLARS



MODEL DAM BY R. S. BALDWIN

When it comes time to appoint a trustee or fiscal agent for revenue bonds, The Chase Manhattan Bank is at the service of state, county and municipal authorities. Chase Manhattan has the staff and experience to handle this function as trustee or fiscal agent in cooperation with banks in the areas where the projects are located. For complete details write: Corporate Trust Division, The Chase Manhattan Bank, 1 Chase Manhattan Plaza, New York 15.

OUR MUNICIPAL NOTEBOOK

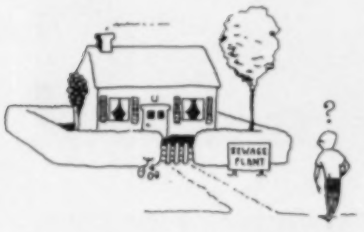
MIX CALCIUM CHLORIDE AND SALT

. . . to get a better ice-control combination. A good ratio is about three parts of salt to one of calcium chloride. The calcium chloride works rapidly for the first 30 minutes and then appears to stop. However, in this half hour, it will do the same work that salt does in over four hours. Salt, however, continues to work for over a 30-hour period. George J. Maher, director of public works, Lewiston, Me., starts adding the calcium chloride whenever the temperature drops to 25°F. He uses calcium chloride alone whenever the temperature drops to below 5°F.

* * *

IT LOOKS LIKE A HOME

A little sewage-purification plant in the Sacramento, Calif., area looks so much like a residence that passers-by frequently stop to ask if it is a model home. The plant, called a



Biofilter, Jr., is completely contained within a space 54 feet square and roofed over with an attractive superstructure. It provides a high degree of treatment with two-stage biofiltration. It was designed by Harry N. Jenks, Palo Alto, Calif., consulting sanitary engineer.

* * *

SPRAY-PAINT PARKING METERS

They're doing it in Princeton, N. J. Parking Meter Maintenance Chief John Jackson has two U-shaped masking jigs that protect the reading faces, the coin-insertion and similar points. These clamp over the Borough's Park-O-Meter and Karpark meters to make spraying in place a fast simple job. A color expert selected a grey-blue-green lacquer to minimize the non-Colonial appearance of the meters and help them blend into the Colonial atmosphere of the Borough. The manufacturers now supply meters in this color, calling it Princeton Grey. Even though the lacquer dries instantly, Mr. Jackson arranges to prohibit parking on a section of the street where the meters need repainting, to avoid getting any Princeton Grey on a car painted Harvard Crimson.

* * *

NOT EVERYTHING IN THE SEWER

While sewers are designed to be rugged and stand abuse, some things don't belong there, cautions Professor Don E. Bloodgood, Purdue University Department of Sanitation. He urges that you try to completely prevent:

- *gasoline, or other explosive solvents (dangerous) or light oils (inhibit digestion processes)*
- *feathers from poultry houses (clog trickling filter nozzles),*
- *hair from tanneries (mats in the digesters),*
- *lime sludge from water softening and acetylene generating plants.*

He recommends that you try to control and avoid shock loadings from industrial plants with wastes of unusual characteristics; avoid excessive temperature extremes in the wastes and extreme variations in the pH of the sewage. He urges control over the amount of copper, zinc, cyanide and similar products that destroy the bacteria used in the digestion process.

He urges that you *do not prohibit* the introduction of ground garbage from food waste disposers mounted in kitchen sinks. He finds no scientific justification for prohibiting them and much that would justify their use.

* * *

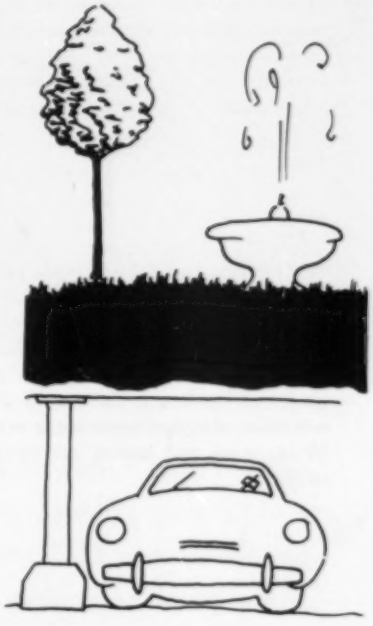
A DUST-FREE INCINERATOR

The Town of Oyster Bay, N. Y., has probably the most dust-free incinerator in the nation. To cut off dust from the storage bin, the place where dust is most troublesome, consulting engineer William Raisch designed an "air curtain." This consists of a string of inlet ports that draw air across the top of the bin and intercept the dust. Two 9,600-cfm Sturtevant fans provide the needed draft for the bin which is 90 feet long, 20 feet wide and 27 feet deep. The dust-laden air passes through a filter to the atmosphere. The plant has a rated capacity of 500 tons per 24 hours supplied through four furnaces, each provided with Flynn & Emrich hydraulically operated stoking grates.

* * *

A PARK ABOVE, PARKING BELOW

Kansas City, Mo., has an attractive, carefully landscaped park with illuminated fountain downtown, near its municipal auditorium, which actually is the roof of a 1,200-car two-level parking garage. The garage portion requires careful ventilation, supplied by seven fans powered by 75-hp motors, and one powered by a 100-hp motor which can exhaust 1,500,000 cubic feet a minute or eight times the required normal operating



capacity. The 100-hp fan also is used to deliver heat to the structure. For positive protection the garage has 19 Mine Safety Appliances carbon-monoxide alarms mounted at breathing height at strategic points on each level of the garage. The structure has three escalators and underground access to the city's Exhibition Hall. ◄◄

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, N. Y.

Count the
when your

Get "carry-type scraper" stripping, excavating, and grading action—to strip sod, shape and grade streets, playing fields, parking lots, recreation areas. Here a TD-9 Four-in-One is stripping sod, with typical inch-close accuracy. You can position the cutting edge to "boil in" materials just like the big scrapers, and work in close quarters where they can't!

Get positive, clam-type bottom dumping that permits handling sticky, non-scouring materials that stop old-style buckets cold! It's the same principle dredging contractors use on muck and gumbo—opening the clam pulls material from bucket surfaces; gravity down-pull assures prompt self-cleanout!

You convert the 4-in-1 into a full-size, full-capacity, depth-controlled bulldozer — with the same finger-tip ease of getting all its other machine actions! Simply open the clam, set "blade" segment to cut, and roll the earth just like a specialized moldboard! The TD-9 rig is backfilling new sewer line installation—works in winter removing snow, and loading out ice-control materials!

Get power-shovel-like break-out force—to do work like old pavement removal or land clearing. This 3-cu. yd. TD-20 Four-in-One, for instance, can apply 43,000 pounds of pry-over-shoe break-out—to dig up and load out old multi-layered asphalt pavement that's up to one foot thick. Then this same machine roughs out new Seattle street and curb grades and completes the subgrade, unaided!

rigs you won't need or miss... clam-action 4-in-1 takes over!

Get "equipment spread" utility—get efficiency no other single machine can duplicate on sanitary landfill waste disposal. Only the 4-in-1 gives the "biting" and controlled dozing actions to spread refuse in uniform layers. Only the 4-in-1 gives compactor plate "ironing-down" action, to "squash" the refuse for complete, odor-free covering. And only the 4-in-1 gives "carry-type scraper" controlled spreading (see photo) to put down "cover" uniformly on-the-go! The TD-15 Four-in-One, shown here, keeps Williamsport, Pennsylvania's landfill *sanitary*, at minimum cost!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®

Count the money-saving applications that 4-in-1's show here. Count tne machines you won't need or miss when a 4-in-1 "takes over." Then total the big savings you'll make on first price and operating costs. And size-up how many more big-ticket, limited-duty rigs the 4-in-1 can replace—in addition to the ones indicated here! Let your International Drott Distributor demonstrate!

EXCLUSIVE ONE-PIECE CAB-BODY DESIGN gives Ford Styleside Pickups extra capacity and extra strength. Heavy duty in every way for heavy going all day! And there's carlike riding comfort thanks to Ford's long wheelbase and exclusive *Driverized* Cab!

THEY'RE HERE!

NEW '62 FORD TRUCKS

Get full-time economy that only starts with Ford's low price!

Meet the trucks that make saving money a full-time business—new Ford Trucks for '62!

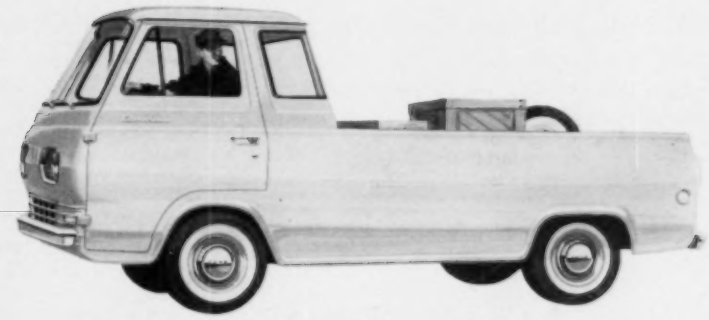
In a selection of over 600 models there's a truck that's right for your job, whatever your job . . . trucks that you can buy and operate at lower cost . . . trucks that can save you money mile after mile, load after load, year after year!

They save on price. They save on gas and oil. They save on tires and on maintenance—wherever there's a way to save! The full record of Ford economy, covering three years of independent tests, is detailed in Ford's Certified Economy Reports. See your Ford Dealer now. Check out the facts, work out a deal, and drive out a truck that saves money . . . full time!

FORD TRUCKS COST LESS

SAVE NOW . . . SAVE FROM NOW ON!

ECONOMICAL HEAVY DUTY V-8's with 292-, 302- and 332-cu. in. displacement give you tailored-to-the-job economy at much lower prices than you would expect in trucks with engines of this size. Stress-relieved cylinder heads, aluminum alloy pistons and sodium-cooled exhaust valves are but a few of the heavy-duty features you get with these engines.



ECONOLINE — ALL-ROUND ECONOMY LEADER — and low price is only the start! Certified tests show this pickup may save $100 on gas, oil, tires and license over your present conventional pickup every 16,000 miles you drive.

AMERICA'S MOST POPULAR VAN — and small wonder! Econoline savings start with a price far under any popular ½-ton conventional panel on the market! And they continue saving every day—certified tests have shown that in 16,000 miles, savings in operating costs compared to the conventional panel you may now own could top $100! Big 4-ft. doors rear and curbside plus 204 cu. ft. of loadspace, and a floor that's flat the full length, mean easy cargo handling.

PROVEN 262-CU. IN. BIG SIX FOR FORD MEDIUMS includes more heavy-duty engine features than any other Six of its size. Never before such long-term durability, reliability, and economy at so low a price.

PRODUCTS OF Ford MOTOR COMPANY

City-Planning, Urban-Renewal Fellowships for Graduate Study

Six two-year graduate fellowships have been granted and four others renewed for a second year under the Sears-Roebuck Foundation's city-planning-and-urban-renewal fellowship program for 1961.

James T. Griffin, president of the Foundation, has announced that this year's winners are:

David E. Boyce, a Northwestern University graduate, to attend the University of Pennsylvania.

Gordon L. Brigham, a member of the Planning Department of Rock Island, Ill., to attend the Massachusetts Institute of Technology.

Frederick W. Mayer, a graduate of Rutgers University, to attend Cornell University.

Robert J. Paternoster, a graduate of Lehigh University, to attend Harvard University.

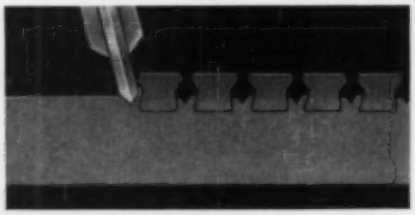
Francis H. Parker, a technician for the Western North Carolina Regional Planning Commission, to attend the University of North Carolina.

David Z. Farbman, currently studying in the Netherlands on a Fulbright scholarship, to attend the University of Pennsylvania.

In addition, city-planning and urban-renewal fellowships granted last year were renewed for George B. Beardsley, enrolled at the University of North Carolina; George N. Kurilko, Massachusetts Institute of Technology; Charles La Marr Sellers, Georgia Institute of Technology; and Richard Shinn, University of Southern California.

Established in 1957 to increase the flow of trained specialists into city-planning and urban-renewal agencies throughout the country, each fellowship includes a stipend of up to $3,000 a year based on need and a $1,000 unrestricted cost-of-education grant to the school.

Robert Calkins, president of the Brookings Institution; Martin Meyerson, vice-president of the American Council To Improve Our Neighborhoods (ACTION); and Dennis O'Harrow, executive director of the American Society of Planning Officials, formed the selection committee which named the 1961 Sears Foundation city-planning and urban-renewal fellows. ◄◄



COOK wire-wound well strainers start life as a coil of wire. By spiral winding around machine-notched supporting skeleton bars on a special winding machine, Cook Well produces a superior, mechanically-bonded well strainer unsurpassed in actual service.

FROM WIRE TO WELL

Startlingly simple in concept, this method offers a practical way to make high quality well strainers in increasingly larger sizes for today's constantly bigger and deeper wells. Well strainers in sizes up to 40" in inside diameter are possible, in a complete range of slot sizes. Lengths are limited only by handling facilities. Cook wire-wound well strainers have all the exclusive features which have made Cook Well's slotted, seamless brass tube type strainers the standard for fifty-years, including direct water inlet, and V-shaped self-cleaning slot, larger inside than out, permitting maximum well development. Made from Red Brass, Everdur Bronze, Stainless Steel and Armco Iron, they offer great strength and rigidity for long years of service.

For leadership in the development of new ideas in well strainers, look to Cook Well. Your inquiries are invited.

COOK WELL STRAINER CO.

world's leading name in well strainers ■ 6330 Glenway Ave. ■ Cincinnati 11, Ohio

Small-City Urban Renewal

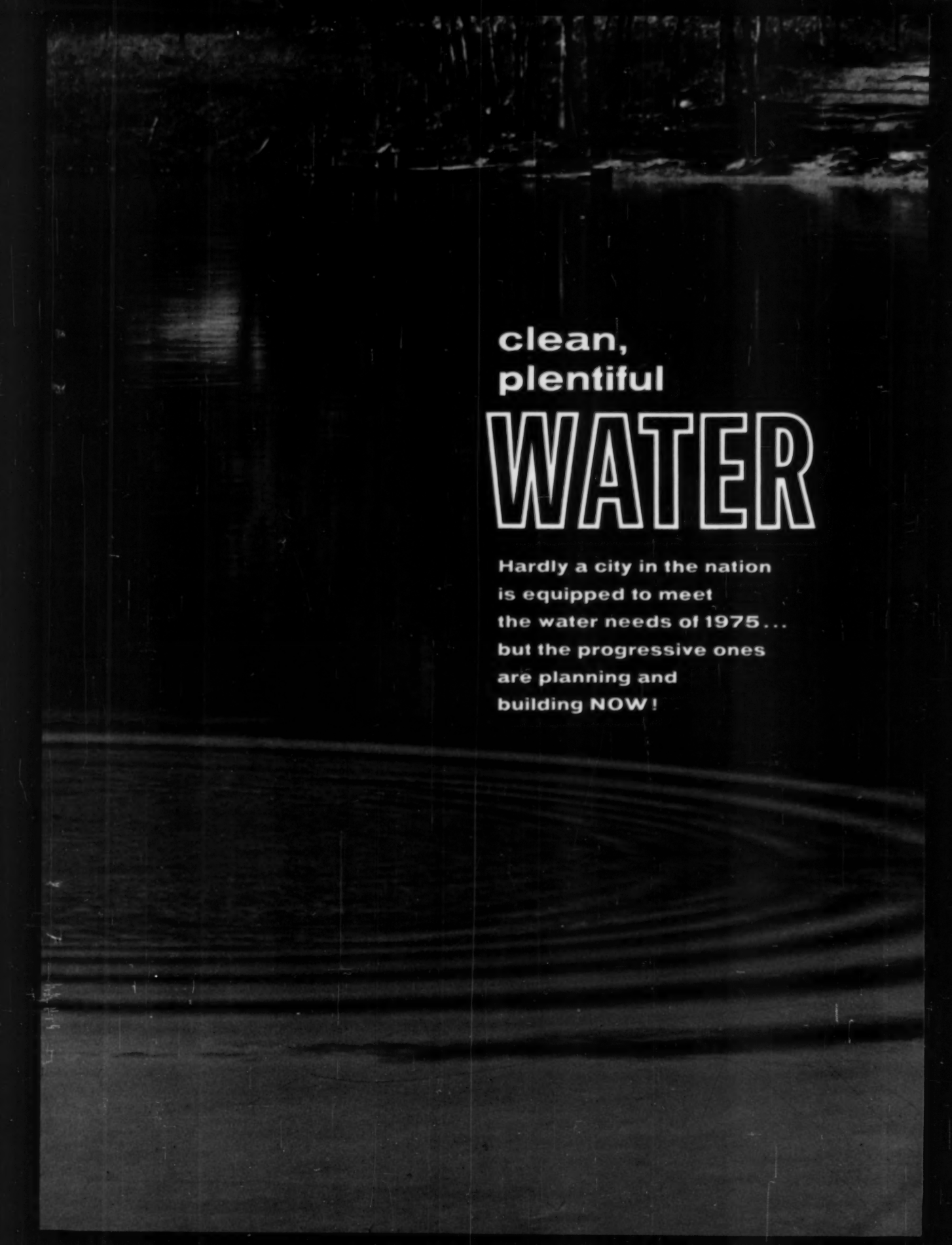
Opportunities for accomplishment in urban renewal are sometimes greater in small cities than in large cities, according to William L. Slayton, commissioner, Urban Renewal Administration.

Speaking before the recent American Municipal Congress in Seattle, Commissioner Slayton pointed out that small and large cities have many similarities as well as differences in their urban-renewal needs.

Commissioner Slayton pointed out that small cities are participating widely in the federally assisted program of urban renewal.

There are 492 cities throughout the nation which operate 938 urban-renewal projects; of these cities 310 (63%) have populations of less than 50,000 and they are operating 409 (44%) of the projects.

"One of our objectives in the Urban Renewal Administration is to bring more small cities into this program," he said. "Both small cities and large cities are necessary elements of our nation and we are proud of the role we have played in helping so many of them achieve environmental and economic betterment." ◄◄


clean,
plentiful
WATER
Hardly a city in the nation
is equipped to meet
the water needs of 1975...
but the progressive ones
are planning and
building NOW!

"WHERE WATER'S CONCERNED, THERE IS SIMPLY NO ALTERNATIVE TO PLANNING AHEAD!"

says R. LEWIS BARTON, Oklahoma City

"Our decision to establish a new water supply was based on the knowledge that Oklahoma City's future growth and prosperity were at stake. Our population has increased 33.2% in the past decade. By the year 2000 we estimate a further gain of 66% over today's population.

"Industry, too, is moving in. We feel certain that Western Electric would never have erected their new $36-million plant without assurance of adequate future water supplies. Then there's the new FAA Aeronautical Center which will eventually employ five thousand people. And with completion in 1963 of the new water line from the Atoka Reservoir, we'll be ready for any industry!"

Mr. Barton is Trustee and Chairman of the Oklahoma City Municipal Improvement Authority.

MODERN FILTER PLANT READY TO HANDLE POPULATION GROWTH OF THE NEXT 20 YEARS!

Pumping 12 million gallons per day, the new Hoskins Filter Plant at Charlotte, North Carolina, has increased the city's water supply by 50%. And as the city grows, so will the capacity of the filter plant. It is designed to supply an ultimate of 72 million gallons per day—more than enough water to provide for the 420,000 population expected by 1979.

And the new plant will remain an attractive addition to its industrial neighborhood. Precast panels of concrete form the walls. Their lively texture and color will keep the building looking clean and modern through years of service to the community.

Hoskins Filter Plant, owned and operated by the city of Charlotte, North Carolina.

Over 99 miles of 60-in. concrete pressure pipe will carry water to Oklahoma City from its new source at Atoka Reservoir in southeastern Oklahoma.

NEW CHARLOTTEBURG DAM AND RESERVOIR HELP NEWARK MEET ITS UNIQUE WATER SUPPLY PROBLEM

Busy, bustling Newark, New Jersey, is the only city in the United States whose population *doubles* during daylight hours. The newest project in the city's continuing program of water improvements is the Charlotteburg Dam. This new reservoir provides an additional storage capacity of 2.9 billion gallons from the Pequannock River watershed. Construction of the project provides for the most efficient use of the four existing reservoirs in the area.

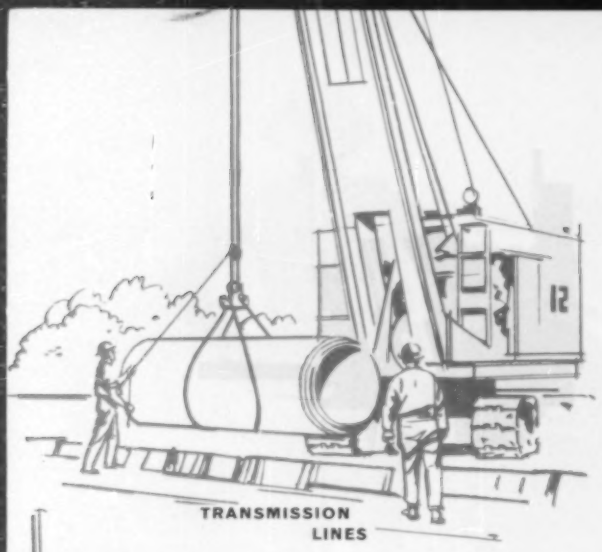
Charlotteburg Dam, largest mass concrete dam in New Jersey, is 685 feet in length and 87½ feet high.

In 1850, Napoleon was on a main water transportation route of the Great Lakes area.

NEW WATER LINES WILL BRING INDUSTRIAL GROWTH TO NAPOLEON, OHIO!

Located on the Maumee River, Napoleon has an abundant water supply. But without proper treatment and distribution facilities Napoleon has not been able to promise relocating industries all the water they needed. And industry has been passing the town by.

Now, you see new asbestos-cement pipelines going in all over town. Plans move ahead for a new treatment plant to double present capacity, allow for even more expansion in the future. Napoleon is back in the business of growing . . . with assurance that new manufacturers will soon be bidding for choice industrial sites.



TRANSMISSION LINES

DAMS

DISTRIBUTION LINES

CEMENT TAKES ON A VITAL ROLE

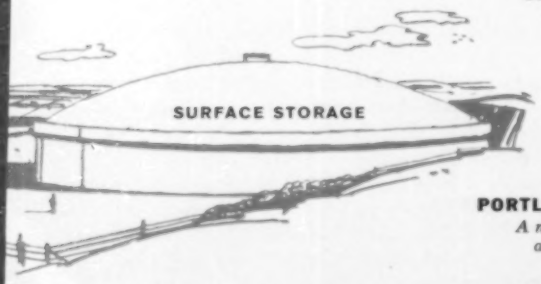
ELEVATED STORAGE

TREATMENT

Across the nation, modern living soaks up water *by the billions of gallons* for washing machines, air conditioners, extra bathrooms. By the 1980's, more than 200,000,000 Americans in urban communities will need 28 to 32 billion gallons of water *every day*. This totals nearly twice the present day demand for water in our cities and towns.

Everywhere today, the need for new water sources, new treatment, storage and distribution facilities is urgent. In such a total program, of course, cement earns a vital role. The strength of concrete, asbestos-cement and other cement products, their durability, and potential for beauty as well as efficiency, make them favored products for planners and builders.

Engineers in nationwide offices of the Portland Cement Association cooperate with city planners and engineers, supply up-to-date information on the newest uses of portland cement for modern water facilities. For details, contact your local PCA office.



SURFACE STORAGE

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

MODERN Concrete

WHEN BUYING HYDRANTS LOOK FOR A MANUFACTURER WITH AT LEAST 100 YEARS' EXPERIENCE

Age has its advantages when you are dealing with fire hydrants, because hydrants must provide many years of reliable service. When a manufacturer has been in business 100 years or more, the quality of his product is well known.

R. D. Wood Hydrants have stood the test of time. There are more than a million of them in use right now. This says a great deal for the excellence of the product and the reliability of service.

When you deal with R. D. Wood (over 100 years in the hydrant business) you have the comfortable feeling that we will still be around when your equipment needs service or even replacement.

Conform to A.W.W.A. specifications

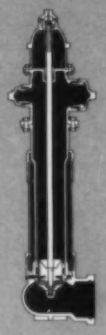
R. D. WOOD COMPANY

FLORENCE, NEW JERSEY

Established in 1803

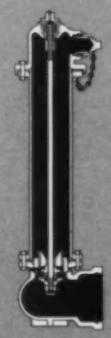
Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds)

THIS IS THE R. D. WOOD LINE



R. D. Wood Mathews Modernized Hydrant with replaceable barrel.

R. D. Wood Mathews Flange Barrel Hydrant... dry head construction keeps it operating in every kind of weather.



R. D. Wood Swivel Joint Hydrant can be faced in any direction.

R. D. Wood Gate Valve—bury it and forget it.

Non-dusting ND-25 unclogs sewer lines fast! It generates heat and agitation immediately when poured into manholes . . . begins to remove and loosen debris on contact. Colored red, ND-25 enables you to test its effectiveness by observing traces of the color in other areas of the sewer system. ND-25 saponifies and emulsifies greases and oils — digests roots, paper and other materials containing a high percentage of cellulose. Packed in convenient 50 lb. metal containers.

See the man from National Chemsearch for the best in municipal chemicals. He's a well-trained specialist backed by one of the finest research staffs in the industry. Write for free brochure on ND-25.

ND-25
SEWER
SOLVENT

NATIONAL CHEMSEARCH CORP.

P. O. Box 10087, Dallas, Texas
Offices in: Los Angeles • St. Louis • New York

THE SEWER SOLVENT WITH RESULTS YOU CAN SEE!

A tree squirrel attracts the attention of picnickers.

Let's have a picnic— at the sewage plant

Would you attend a picnic at your sewage treatment plant? In Ashtabula, Ohio, such picnics are common.

It all began four years ago when we invited the Lake Erie Toastmasters to hold a meeting there. While the charcoal grills warmed the steaks on a little knoll only a few feet from the plant itself, we provided a grand tour of the facility. This meeting was so successful that this organization now returns every year for a repeat performance.

The Toastmasters broke the ice and, with the attendant publicity, other groups followed. Now, it is an exceptional summer week that does not find several picnics on the grounds. When rain precludes the use of one of the knolls with their picnic benches, the groups adjourn to the service garage for protection.

The first step in the active public-relations program we now follow took place several years ago when we got in touch with the seventh- and eighth-grade science teachers. As a result of talks given to these pupils, we arranged for class tours of the plant. By describing the various operations in terms which they understood, we encouraged their interest to such a degree that 30% of them returned with their parents to take advantage of the newly organized plant tours. Between meetings and picnics, about 1,000 students and 450 adults now visit the facility each year.

If the sewage plant were not a pleasant place, the greatest public-relations program in the world would fail. We concentrate our efforts to keep any potential odor-breeding area in a particularly sanitary condition. We use National Chemsearch's Solvex to eliminate the distasteful smells emanating from the screenings and grit. Our residents know that sewage-treatment plants do not have to be disagreeable and that, in fact, they can be pleasant places to grill a steak or hold a meeting.

In only a few short years our "corporate image" substantially improved. Residents now refer to us as "the bacteria farmers" or as "the people who have connections with the best families in town."

If rain interferes, the group moves to the service garage.

JOHN C. FUNK
Superintendent of Water Pollution Control
Ashtabula, Ohio

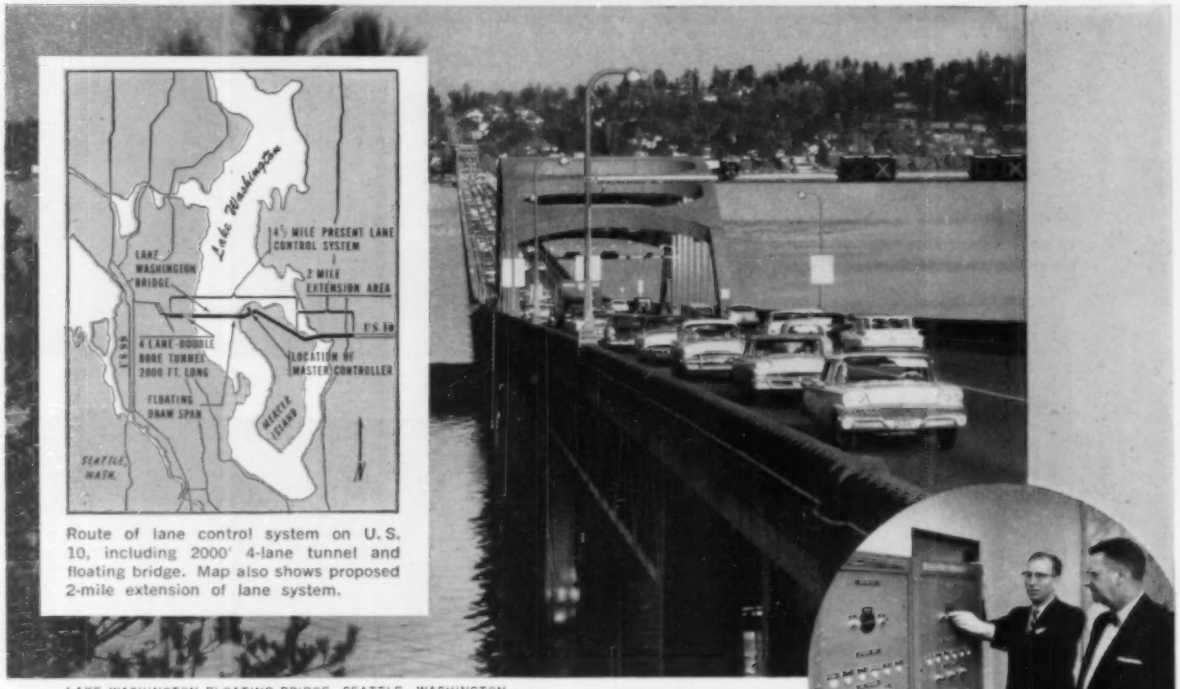
St. Louis specifies infiltration-proof sewers

Flooding of basements by infiltration of storm water into sanitary sewer lines in St. Louis County because of old and improperly constructed joints, for which the Metropolitan Sewer District has been trying to find an answer, has resulted in authorization of new specifications by the District's Board of Trustees.

This authorization provides that joints for sanitary sewers, 21 inches in diameter or smaller, shall be factory-molded polyvinyl chloride compression joints on vitrified clay pipes.

Executive Director Peter F. Mattel feels that the factory-applied polyvinyl chloride joints will reduce infiltration to an absolute minimum and in most cases, will eliminate infiltration entirely. ◄◄

4½ mile EAGLE LANE CONTROL SYSTEM PROVES EFFICIENT



Route of lane control system on U. S. 10, including 2000' 4-lane tunnel and floating bridge. Map also shows proposed 2-mile extension of lane system.

LAKE WASHINGTON FLOATING BRIDGE, SEATTLE, WASHINGTON

Electrical Engineer Eugene F. Ireland, left, and Traffic Engineer Rex G. Still inspect the EAGLE Monotrol® Master which automatically governs 4½ miles of reversible lane signals. Engineered and installed by State of Washington, Dept. of Highways.

CONTROLLING TRAFFIC — When, after 21 years, the normal 2-lanes-east, 2-lanes-west plan no longer accommodated peak hour loads, reversing one lane was the only solution for the Lake Washington floating bridge, Seattle, Washington. The first method — manually setting cones — was both dangerous and time-consuming. The present automatic lane control system of EAGLE equipment clears tunnel and bridge traffic in the reversible lanes and changes flow in 2 minutes — instead of the previous changeover time of 45 minutes. 33 signal structures along the 4½ mile route display 396 signal faces.

The entire system is automatically governed by the EAGLE Monotrol® single circuit system of interconnection.

CONTROLLING COSTS — This new lane control system may only be in operation for 30 months, at which time a second floating bridge will be open to traffic. During this projected 30 month period the former manual method — including maintenance and user time lost through lengthy changeovers — would have cost $136,000. The EAGLE reversible lane system cost $141,500 (including installation and maintenance costs, less salvage value). Net saving: $44,500.

BLISS
EAGLE SIGNAL COMPANY • Moline, Illinois
A DIVISION OF THE GAMEWELL COMPANY, AN E. W. BLISS COMPANY SUBSIDIARY
Eagle Equipment Saves Lives — Saves Time
Traffic Actuated Controllers
Multi-Dial Controllers
Lane & Bridge Control
Traffic Signals
EC Traffic Adjusted Systems
ONE SOURCE — ONE RESPONSIBILITY for all traffic control needs

Two of these 42-yard-capacity trailers now make the trip to the refuse-disposal site in place of the nine smaller collection vehicles.

Fencing three sides of the transfer chute keeps papers from blowing away and the steel framework permits covering the chute with tarpaulin if necessary.

Abilene cuts collection costs

The use of recording meters on our trucks and the construction of a transfer station have lowered refuse-collection costs in Abilene. The Servis Recorder units on the trucks uncovered some interesting facts. We found that truck operators were taking four coffee breaks a day and up to 1½ hours for lunch, were finished with their operations before quitting time and then just rode around to kill time. A study of operating costs indicated each unit cost around 11 cents per minute and that for nine of our units about 45 minutes to one hour was required for one round trip to the disposal site—and each unit made three such trips per day.

Our first change consisted of rearranging schedules allowing two coffee breaks per day, one hour for lunch, and working until quitting time. The next step consisted of eliminating the long haul for the nine units by constructing a transfer station. We purchased two Hobbs Hyd-Pak trailers to haul refuse from the transfer point to the disposal site. Each of the 42-yard trailers carries the equivalent of up to six of our regular collector loads and saves approximately 20 minutes travel time for each collector unit.

Refuse Collection Superintendent Jeff Chancey and the writer developed the idea for the transfer station and Street Superintendent Fred Bell, who was once a contractor, drew on his experience to construct the facility.

We are now using 19 packer-type collectors of various manufacturers with capacities varying from 12 to 20 cubic yards. Nine of these, all working on one side of the railroad tracks that practically bisect the city, dump their loads into the large trailers. We plan to extend this operation by building a dumping floor at the transfer point and obtaining some type of loader to transfer refuse from the dumping floor into the trailers. This will eliminate the need for the collection units to wait their turn to unload into the trailer, as is now necessary.

M. M. Anderson
Director of Public Works
Abilene, Texas

New incinerator-design group

A new committee, formed under the auspices of the American Society of Sanitary Engineers, is directing its engineering skills to the problem of incinerating refuse and the resulting problem of air pollution. William Raisch, consulting engineer of Garden City, New York, is general chairman.

The ASME team believes that an answer to air pollution from incinerator stack gases lies in the design of new plants which capitalize on a more thoroughly understood knowledge of the combustion process in an incinerator. A series of meetings will take place in New York metropolitan area in 1962.

Seven subcommittees will tackle the individual topics of design, stokers, materials handling, refractories, auxiliary equipment, operation and air pollution control. Chairman Raisch invites interested individuals who wish to participate in this work to contact him through ASME, 345 E. 47th St., New York 8, N. Y. ◄◄

REEVON BRISTLES give longer wear per dollar than any other bristle— natural or synthetic!

Reevon® polypropylene fiber is made by Reeves—the only manufacturer with an entire plant devoted exclusively to the production of polypropylene for industry. When ordering original equipment or replacement bristles always specify Reevon, distributed nationally by

KAISER-REISMANN CORPORATION
325 Spring Street, New York 13, N.Y.

Reeves Brothers, Inc., Fiber Division 1071 Avenue of the Americas, New York 18, N.Y.

A galvanized-iron sleeve directs the well water to the tank.

Try this flusher for size

A 7,200-gallon street flusher, the brain child of our municipal employees, flushes all the paved streets in Storm Lake, Iowa, a community of 8,000, in five and a half hours.

The flusher tank is a modified gasoline transport trailer, purchased second hand at a cost of $1,800. Transported by a V205 International truck tractor which also tows sludge from the sewage and water plants in a different trailer, the new tank saves many man hours compared to smaller units. It eliminates the necessity of numerous fillings and conserves the treated water supply as well by using untreated water directly from the city's deep well. The 900-gpm well pump requires only eight minutes to load the tank. The flusher begins work early in the morning each day that weather permits and completes the task before most residents stir from their beds.

The tank contains three flushing nozzles, one on each side in front of the rear wheels and a third under the center of the vehicle. The operator adjusts the flow to each nozzle by means of electrical cab controls. He cleans a four-lane highway, which performs double duty as a city street, by operating all three nozzles at the 110-pounds pressure supplied by the pump. The 100-foot-wide main thoroughfare receives this same treatment with additional runs along each curb at a reduced pressure of 60 pounds to prevent the water and debris from fouling the sidewalk and damaging the store fronts.

To convert the former gasoline transport to municipal service, city employees removed the bottom portions of the inside tank partitions so that they would act as baffles. They then took the unit to the E. D. Etnyre Company of Oregon, Illinois, manufacturers of street flushers.

The company's technicians planned the mounting of the flushing equipment, pump and power unit. When the tank returned to Storm Lake, city personnel installed the equipment necessary to ready the unit for flushing.

This novel flusher also contains a large valve and connection for the use of the fire department's pumper to aid fire control beyond the reach of watermains. The cost of this novel double-duty flusher totaled $5,000, exclusive of motive power.

LLOYD BRIDGE, *Mayor*
Storm Lake, Iowa

The flusher cleans four lanes with one pass.

Five men versus 45 minutes

By adding an installation time of 45 minutes, we cut our ice-removal gang to two men from its former total of seven—a net saving of five men on the street. A Swenson tail-gate type spreader is responsible for this improvement.

Ice removal previously required four laborers, two light-equipment operators and a foreman to spread the necessary salt. The new mechanical spreader, operated from the cab by the driver, now releases these extra men for other snow-removal work and assumes the chore of spreading salt throughout the entire city.

To check results, the foreman in a pick-up follows the spreader. The addition of the second vehicle and driver allows the spreader operator to concentrate on safe driving because he can rely on the driver of the pickup to notify him of the condition and operation of the spreader. When it is empty, the driver receives a signal and speeds to the shop where he reloads it himself.

JOHN GIROUX
Superintendent of Public Service
Hazel Park, Mich.

Letters To the Editor

Newburgh "Revolution"

In the current issue of *The Municipal Journal* we have reprinted your editorial on the city of Newburgh. I feel this is the sort of thing that needs saying to people in Britain for this country, too, has received large numbers of immigrants in recent years.

MAURICE HEDGES, *Editor*
The Municipal Journal
3 Clement's Inn.
London, England

EDITOR'S NOTE: Newburgh's effort to control rising welfare costs have brought more attention to the city than it has desired. But the action has produced an effect, even at the federal level.

California's First Completed Urban-Renewal Project

Last June Calexico, Calif., (population 8,000) became the first city in this state to complete officially an urban-renewal project.

The 21-acre area located in the northeast section of the city, involved a total of 68 residences. Of these, 65 had deterrorated so badly that they had to be demolished. Only three, under owner-participation agreements, were sound enough for rehabilitation. In what used to be a badly blighted area, 72 new single family residences now stand, along with ten duplexes.

The net project cost of the "Hermosa Homes" development was $515,938. The city financed its share of the net project through non-cash local grants-in-aid. A newly completed $671,000 elementary school draws approximately 25% of its enrollment from the project area. This item alone qualified under the non-cash local grants-in-aid for public facilities to the amount of $163,280. Donated land and project-site improvements brought the city's total non-cash grants-in-aid to $174,557, more than enough to meet Calexico's one-third share of the net project cost.

Before the city undertook the work, the project area brought the city approximately $2,200 per year in taxes, and a like amount to the county and schools, or a total of $4,400. At the present time the same area is contributing a total of approximately $16,400 in taxes, or an increase of $12,000, half going to the city, and half to the county and schools. ◄◄

What Cities Are Doing About Air Pollution

Lead Levels

Intensive studies of lead levels—in the air and in the human system—are being made by health and air-pollution-control authorities in Philadelphia, Los Angeles and Cincinnati, under United States Public Health Service direction. These studies are the outgrowth of recommendations on tetraethyl lead made by a special advisory committee to the Surgeon General, which suggested that the Public Health Service, in collaboration with manufacturers of tetraethyl lead and other appropriate organizations, conduct studies to help develop hygienic standards for atmospheric lead and to learn more about the body burden of lead in various selected population groups. Two types of studies are being made. First, the air over the three cities, at several sites, will be sampled and measured for the presence of lead contaminants. Second, medical studies will evaluate lead levels in the blood and urine of both average population groups and other groups whose work exposes them to heavy amounts of automotive exhaust. In addition, special studies may be made of carbon monoxide and airborne lead in such locations as garages and vehicular tunnels, where they are presumed to be more concentrated.

In Mexico City

Delegates to the Ninth National Tuberculosis Congress in Mexico warned residents of Mexico City that the danger of air pollution is growing there. They said the city's air has become laden with dust and smoke and that the polluted air is contributing to respiratory ailments, particularly chronic bronchitis and pulmonary emphysema.

Library Lends Supplies

A comprehensive Technical Library specializing in air-pollution control and an Audio-Visual Service are now available to scientists, educators and engineers in New York State, Dr. Herman E. Hilleboe, State Health Commissioner and Chairman of the Air Pollution Control Board, has announced. Library privileges and the loan of materials from the Audio-Visual Service can be arranged by contacting the New York State Air Pollution Control Board, 84 Holland Avenue, Albany 8. The Technical Library, located at the same address, is equipped to provide space, microfilm readers and other necessary supplies to researchers.

Count High in 38 Counties

The annual report of the Health Department of Fergus Falls, Minn., issued recently, indicates that there is more air pollution in that city than in Minneapolis, St. Paul or Duluth, according to surveys made in 1959 and 1960 by the Minnesota Department of Health and the United States Public Health Service. Reports are not final, but results indicate the "soiling index values" are higher in Fergus Falls, due to greater use of solid fuels for heat and power. . . . A recent report by the Minnesota Department of Health indicates that 38 counties have air contamination in sufficient concentration to cause discomfort or inconvenience plus damage to property or vegetation; 22 counties are less affected, with measurable discomfort or inconvenience to residents found but no damage reported, and there is no problem in 26 counties of the state. The results were obtained on the basis of a nine-month study, made with the assistance of the United States Public Health Service.

—Prepared by Kenneth Kowald

Stop accidents before they happen

with SOLVAY CALCIUM CHLORIDE
and salt mixtures

Look! Accidents like this can be prevented . . . and so can the loss of business caused by icy streets that keep shoppers home. Solvay® Calcium Chloride and salt mixtures are the answer!

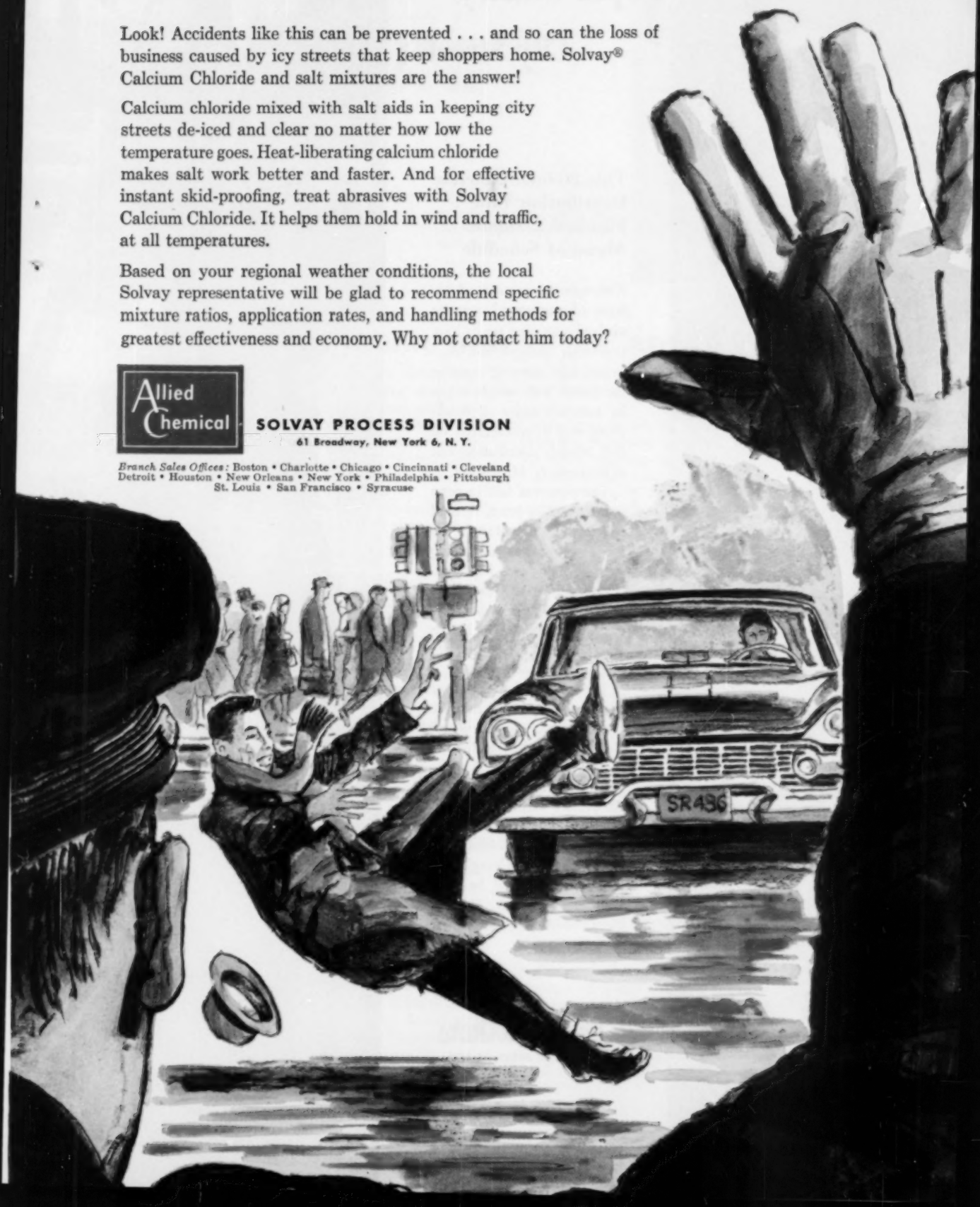
Calcium chloride mixed with salt aids in keeping city streets de-iced and clear no matter how low the temperature goes. Heat-liberating calcium chloride makes salt work better and faster. And for effective instant skid-proofing, treat abrasives with Solvay Calcium Chloride. It helps them hold in wind and traffic, at all temperatures.

Based on your regional weather conditions, the local Solvay representative will be glad to recommend specific mixture ratios, application rates, and handling methods for greatest effectiveness and economy. Why not contact him today?

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

Branch Sales Offices: Boston • Charlotte • Chicago • Cincinnati • Cleveland
Detroit • Houston • New Orleans • New York • Philadelphia • Pittsburgh
St. Louis • San Francisco • Syracuse



Open Country City Streets

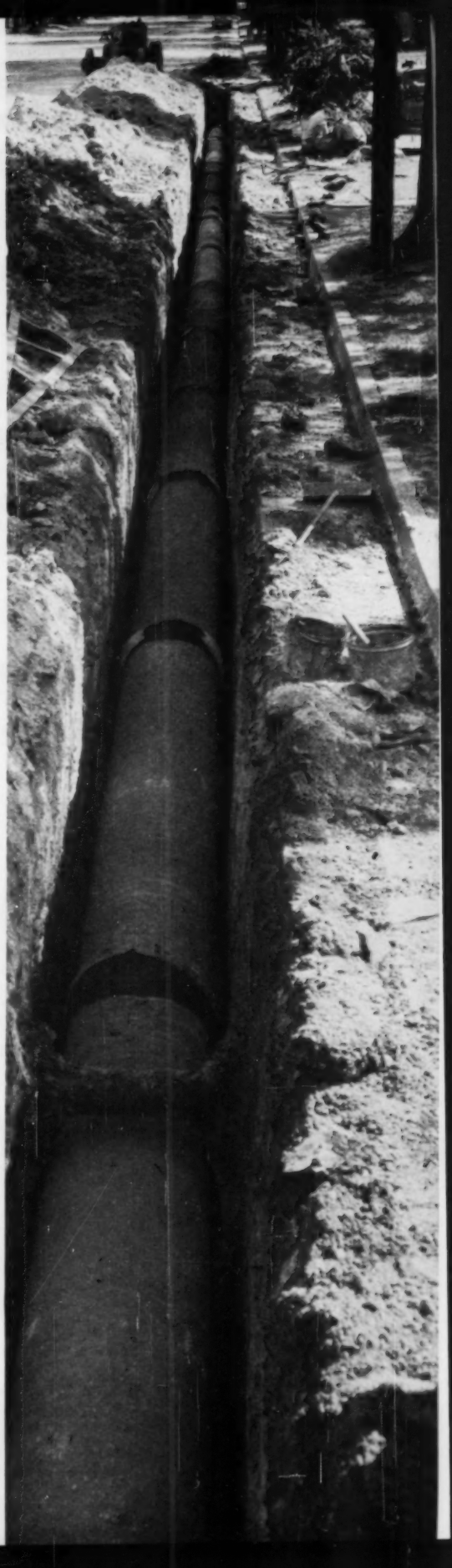
This 20-inch Concrete Distribution Line Finished 2 Months Ahead of Schedule

Although the primary advantages of prestressed concrete steel-cylinder pipe are its long life, high strength and continued high carrying capacity, the speed with which it can be installed under all conditions was demonstrated on this 20-inch distribution line at Hattiesburg, Mississippi.

The pipe was laid in open country and in town, in mud and in dry sand. Most of the job however was along city streets. Traffic was kept running smoothly and there was no interruption in water service. It was started in March and completed in October, two months ahead of schedule.

The 4.7-mile line is part of a loop around town to raise the general pressure level and provide a greater supply for fire protection.

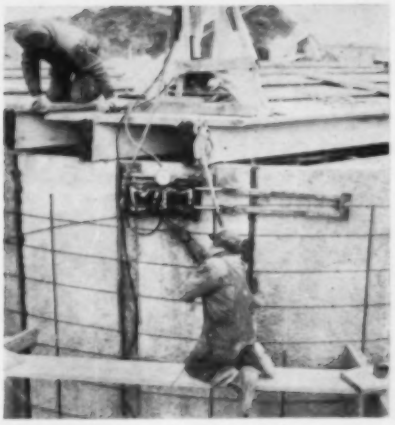
Consulting Engineers for the project were Allen & Hoshall, Memphis. Contractor was J. B. McCrary Engineering Corp. of Atlanta, Georgia. The pipe was furnished by Price Brothers Company, Hattiesburg and Dayton, Ohio.



Price Brothers
CONCRETE PRESSURE PIPE

Threaded inserts cast in the panels near one end made it possible to screw in eyebolts for lifting.

A hydraulic cable stretcher applies tension to the prestressing cable; note the step arrangement of the roof slabs.



Neoga's water tank first of its kind

The 190,000-gallon prestressed-concrete water tank at Neoga, Ill., features an integral footing and floor and precast wall and roof panels. Designed and constructed by the Preload Company, Inc. of New York, the tank, which measures 43½ feet in diameter by 18 feet high, embodies 21 wall panels and nine prestressed double-T roof slabs. Only about two feet of the structure protrudes above grade.

The V-shaped edges of the curved, 6½-foot-wide-by-4-inch-thick panels formed diamond-shaped vertical joint openings when assembled. These joints were sealed with dry-packed mortar; prestressing operations started after all roof slabs were in place. The four-foot-wide double-T roof slabs, which span the entire width of the tank, rest on precast concrete blocks mortared to the top of the wall.

Construction

Construction consisted of placing the 12-inch-thick footing and four-inch-thick floor as an integral unit. A crane then lowered the wall sections into a three-inch-deep channel cast in the footing and fitted with a Preload rubber pad. Temporary braces held the slabs in place during erection.

The roof slabs, which vary in length according to the segment of the tank spanned, form a step pattern, with the highest slab located in the center of the tank.

Overlapping slab flanges provide a continuous tank covering. Neoprene gasket strips in each joint make the cover weather-tight.

Prestressing consisted of tightly wrapping a cable around the tank in spiral fashion, applying tension to the cable with a hydraulic cable stretcher during the wrapping process. Laps were spaced six inches apart at the bottom, graduating to eight inches at the top.

Footing and floor slab were placed in less than one week. It took eight hours to erect the wall panels and another four hours to place the roof slab. Prestressing was completed in one day. Total on-the-job construction time for the entire project amounted to about seven weeks.

Engineering Services Corporation, Decatur, Ill., served as consultants on the job. Midwest Prestress Concrete Company of Springfield, Ill., fabricated the roof slabs and trucked them to the job and the Federal Cement Tile Co. of Chicago precast the wall panels and transported them some 150 miles to the site. ◄◄

Chemicals reduce water requirements

Hexadecanol and octadecanol, chemicals which some use to reduce evaporation from lakes and reservoirs, may diminish the amount of water lost to the atmosphere by growing corn. Greenhouse experiments indicate this reduction of transpiration in growing corn ranges from 17 to 40%, depending on the amount and intensity of sunlight.

Researchers point out the possibility of using this material to control plant-moisture flow in areas which suffer from a shortage of water. Professor Lawrence Bliss of the University of Illinois Botany Department collaborated with the Illinois Water Survey Department in the application of hexadecanol, a derivative of whale oil and beef fat, to the corn. This product is a fatty alcohol which the research team mixed in powder form with the soil. The plants extracted the hexadecanol from the ground with no further effort.

Current experiments with radioactive hexadecanol (for ease in tracing) prove that this material finds its way to the plant leaves. Other outdoor research now in progress indicates that this chemical has definite possibilities of reducing the water requirements of grasses and small trees.

When applied to water reservoirs, hexadecanol forms a film one molecule thick on the surface. This retards evaporation but does not prohibit the movement of oxygen and other gases.

W. J. Roberts
Engineer
Illinois State Water Survey

Tots fight fires on retired truck

Old Truck No. 3 fights hundreds of imaginary fires every day.

A decommissioned fire truck provides Bayonne's youngsters with a great deal of pleasure. Rather than accept a pittance on a trade-in, we installed the 1928-model ladder truck adjacent to a children's playground in our largest park.

The park-maintenance superintendent welded all movable parts of the stripped truck to insure the safety of the youthful fire fighters. A new coat of "fire-engine red" further enhanced its tot-attracting ability. We sank it into the ground to reduce the man-sized step formerly required to mount the running boards of the old-fashioned vehicle.

Just as fire knows no season of the year, almost every daylight hour finds a group of neophyte firefighters dousing imaginary blazes from their new vantage point atop the vehicle.

GEORGE J. PRENDEVILLE
Director
Dept. of Parks and Public Property
Bayonne, N. J.

Rifle range makes a good neighbor

Sacramento's new $60,000 rifle-and-pistol range, located in a city park, is a good neighbor. The brick and stucco structure which houses the marksmen contains overhead sound baffles and sidewall insulation in the firing area to muffle the reports.

The new facility in its 7,742 square feet of floor space contains 14 firing lanes, accommodations for 100 spectators and three classrooms with doors which fold back to accommodate 75 students. The range has its own parking lot and is adjacent to a swimming pool and softball diamond in a small park.

Firing-lane numbers sport alternate colors of white and orange to guide the marksmen to the correct targets. Range distances include 50 feet for small-bore rifles and 60 feet for pistols. A hand-operated pulley system transports the targets to the riflemen for scrutiny and replacement.

A range officer continuously supervises and controls the firing. Aiding his vocal commands is a red neon "No Firing" sign to further insure the safety of participants. The safety rules of the National Rifle Association govern all proceedings. Some additional rules also apply. Notable among these is a requirement that all participants shall load manually and fire single shot their automatic, semi-automatic, pump or lever action rifles. The safe handling of fire arms is the most important objective.

Spent bullets fall in a bed of sawdust, specially treated to make it fireproof. Park and Recreation Department personnel will mine an expected 4,500 pounds of lead from the sawdust twice a year. The money obtained from the salvaged lead will finance the gun safety program for juniors. Brass-cartridge recovery will also supplement this program.

The insulation and tight construction of the building prevents firing from disturbing the peace and quiet of the neighborhood. From the outside, the heavy pistol reports sound like muffled hand claps. A few minutes' operation of the exhaust fan reduces the air pressure inside the building to the extent that doors open with some difficulty. Neighbors will hear more noise from the adjacent swimming pool and ball diamond than from Sacramento's new rifle and pistol range.

REG RENFREE
Director of Parks and Recreation
Sacramento, Calif.

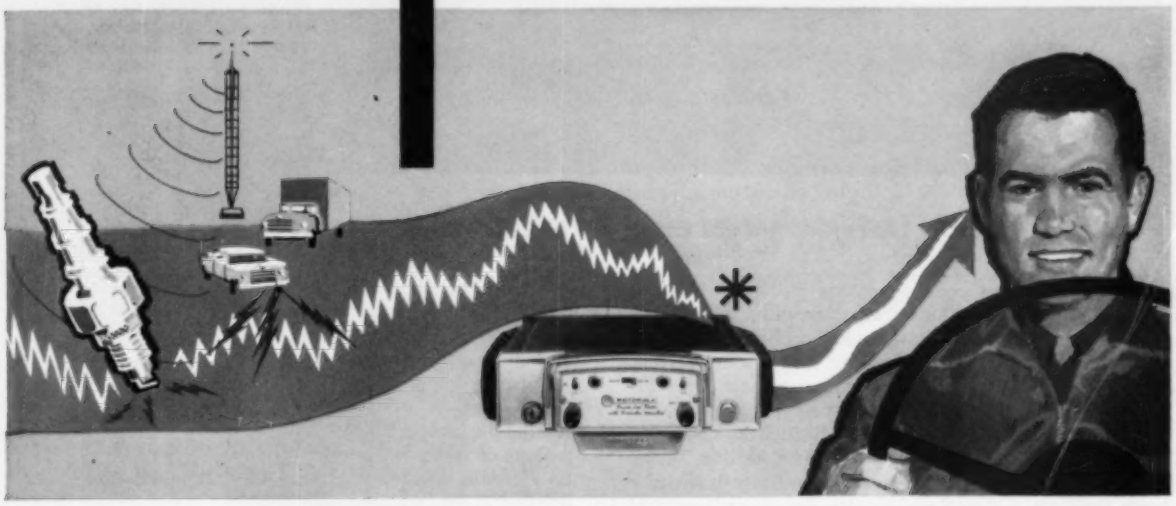
Need for marinas on the rise

The days of the old-fashioned wooden dock are just about over but at the same time the supply of both public and private marinas is lagging. This is the essence of a study recently completed by Standard Steel Products Mfg. Co., Milwaukee, Wis.

Inquiries about all-steel docks, piers and accessory equipment coming to this company have jumped an amazing 300% during the past 16 months. Over half of these inquiries were from individuals who do not now own lakeside or river-front properties. ◄◄

new...Motorola MOTRAC radio with

EXTENDER *operation*



✳ *CUTS OUT IGNITION NOISES*

Dramatically Improves Overall Efficiency In 24-50 mc 2-Way Radio Systems

Motorola MOTRAC radio with Extender operation puts ignition noise suppression where it does the most good—built right into the receiver. Here it suppresses ignition noises from your own vehicle as well as those in the vicinity... providing the answer to the biggest problem in low-band 2-way radio systems today.

First and foremost, Extender operation improves reception throughout your system. In as much as ⅘'s of your territory, ignition noises can garble your messages. Now messages are clear. "Hash" caused by ignition noise is gone. *Second*, you can "extend" useable operating range where ignition noises are high. Motorola Extender operation suppresses disrupting ignition noise on weak, fringe area signals allowing the message to come through clearly—right out to the limits of your radio coverage. *Third*, you can reduce interference from other radio systems (extraneous messages, ringing and other noise interference known as intermodulation)... just flip the switch on the control head.

"MOTRAC" is a trademark of Motorola Inc.

HEAR FOR YOURSELF

Send in coupon NOW
for a free, on-the-job recording...
listen to the dramatic
difference in message clarity.

Motorola Communications & Electronics, Inc.
4501 Augusta Blvd., Chicago 51, Illinois
A Subsidiary of Motorola, Inc. Dept. AAC144

☐ Send me phonograph record

☐ Have salesman phone for appointment

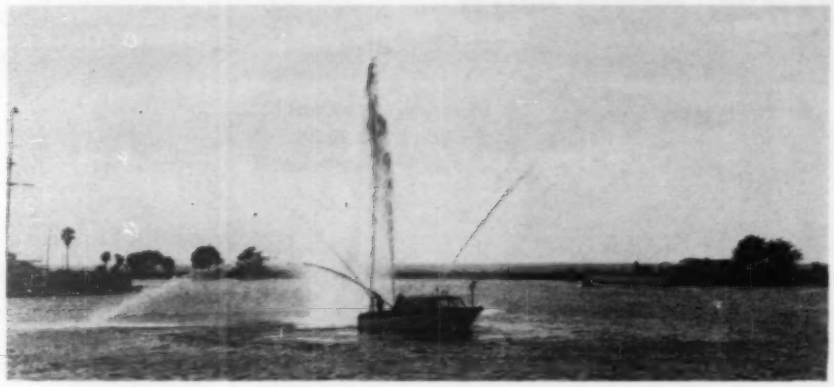
Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

MOTOROLA 2-WAY RADIO



This little marine fire-fighting craft, the size of a small cabin cruiser, shows that it can spout water like a school of whales.

Pint-sized jet-powered fireboat

A small, 28-foot boat skimming along the choppy waters of Lake Pontchartrain, spewing geysers of water, recently demonstrated what probably will be a new trend in marine fire-fighting and rescue vessels. The craft utilizes the same jet-propulsion technique for propelling the boat as it does to fire spouts of water.

The fire boat, made jointly by SaftiCraft Corporation, Patterson, La., and Safety Jets, Inc., Dallas, Texas, takes water in beneath the hull and shoots it out the back through a directional device for propulsion and steering, and at the same time pumps water for fire-fighting. This eliminates the need for separate engine and apparatus to pump the water, required by conventional craft.

Because the boat has neither rudder nor propeller, it can operate in shallow water. The model demonstrated in New Orleans can pump as much as 2,250 gallons of water per minute. It was on its way to Fort Lauderdale, Fla., to become part of its municipal fire-fighting equipment. ◄◄

Police-car colors match the rainbow

Don't be surprised to see police pursuit cars painted lemon yellow, or turquoise or even burnt orange. Apparently state, county and municipal police agencies are ordering cars in a wide variety of bright colors.

About 80% of the Dodge police cars, says General Sales Manager John B. Naughton, are ordered with black or white paint or a combination of the two. But the remaining cars are more colorful.

The State of Wyoming's Dodge Pursuits are white with black diamonds on the trunk and hood.

The State of Florida ordered 51 police cars. Of these, 38 have the roof, rear panel and half of the rear quarter panel painted cream, and the rest painted black. Four station wagons are a buckskin beige.

Dayton, Ohio, chose the widest variety of colors of the year when they ordered 38 police cars. Eighteen of the cars were painted a special royal blue. The remaining cars were vermilion, turquoise, buckskin beige, rose mist, frosted mint green and Aztec gold.

Some communities order special paint to match older vehicles in a fleet. The City of New York ordered a special red to match present fleet vehicles. San Jose, Calif., ordered 14 police cars painted a special blue to match the city's present fleet. ◄◄

Small community two-way police radio

The little New Jersey community of Hillside now has a pocket-size two-way radio with a five-mile range.

The new Motorola walkie-talkie set, donated by the Hillside Kiwanis Club, is completely transistorized and weighs 28 ounces. The call letters of the new instrument will be WT 1. ◄◄

Mayor Louis A. Dischler, Police Commissioner Sidney Birnbaum and Police Sergeant George Davies test the transistorized two-way radio.

Regular Submersible

SUBMERSIBLE PUMPS

deliver water

economically

consistently

silently

efficiently

The Layne Submersible Pump installation gives you noise free operation because the pump and motor are completely submerged. The Layne Submersible is adaptable to all wells; requires a minimum of space since no pump house is required; eliminates possibility of water contamination; and eliminates the opportunity for vandalism or other accidental mishap or damage.

Layne Submersible Pumps are available for wells as small as 6 inches and in capacities from 30 GPM up. For additional information write for free bulletin number 202.

The Layne In-Line Submersible pump provides the answer to many problems in booster pump applications. The pump operates as an integral part of the line and is designed for use by municipalities, industry, such as petroleum and chemical plants and by agriculture. Advantages include: simple installation, no additional space required, continuous service even under flood conditions, and no possibility of surface water contamination.

Layne In-Line pumps are made as small as 4 inch bowls on a 4 inch motor for use in a 6 inch pipe to deliver 30 GPM. Larger sizes are available as required. For additional information write for free bulletin number 203.

In-Line Submersible

Layne SINCE 1882 — COMPLETE WATER SERVICE

LAYNE & BOWLER, INC., MEMPHIS

General Offices and Factory, Memphis 8, Tenn.

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

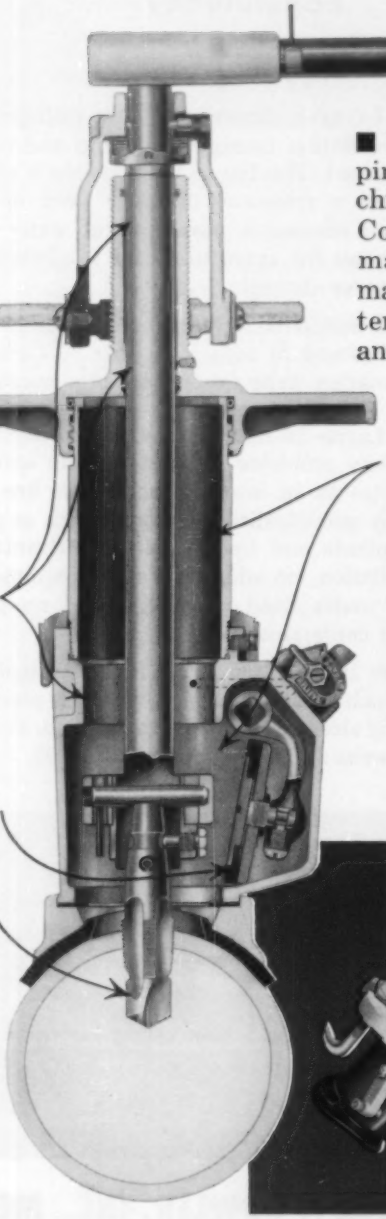
Sales Representatives in Major Cities

Find LAYNE Fast in the Yellow Pages under pumps

fast, trouble-free water service connections with the **MUELLER B-100 MACHINE** *and* **MUELLER CORPORATION STOPS**

■ For over 90 years, the MUELLER Tapping Machine, MUELLER Tapping Machine Tools and the line of MUELLER Corporation Stops have been precisely matched in design and quality. This matched working team has given the Water Works industry its most dependable and economical service connections.

designed for ease of operation— perfect alignment— accurate, watertight connections.



Three bearing design of boring bar assembly assures perfect alignment with the main in all phases of operation. Absolute accuracy, longer tool life and ease of operation are dependable benefits of this engineering feature.

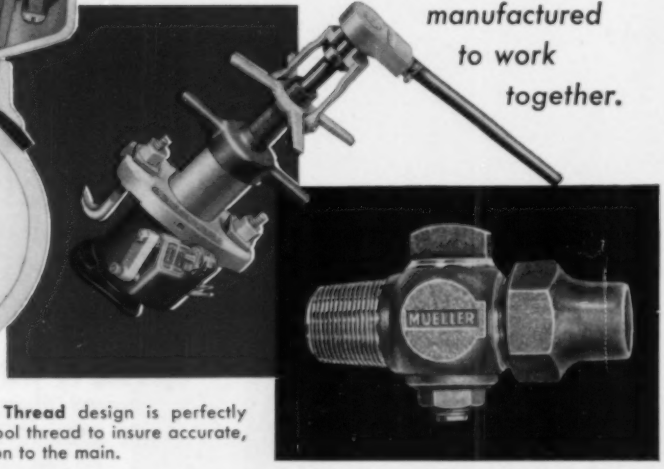
Offset flop valve design provides trouble-free means of isolating full water pressure in lower chamber.

Matched Tool and Corporation Stop design allows easy, accurate fit and alignment in attaching to the boring bar.

Double Chamber design permits the service connection to be made under full water pressure in two separate operations—first the main is drilled and tapped; second, the corporation stop is inserted in the threaded hole in the main. *This is accomplished without interrupting water service and with no loss of water.*

Double Chamber design permits the machine to be handled in lightweight sections. The base section of the machine, which contains the valve chamber, is rigidly attached to the main. The top section, with the boring bar assembly, is removable. This gives complete flexibility of operation, such as allowing the tool or stop to be removed at any time during the operation, or permitting the extraction and replacement of old corporation stops.

design matched and precisely manufactured to work together.

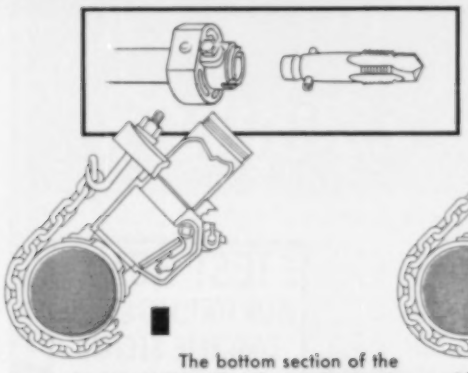


Corporation Stop Thread design is perfectly mated to tapping tool thread to insure accurate, watertight connection to the main.

For additional information, consult your Mueller representative or write direct.

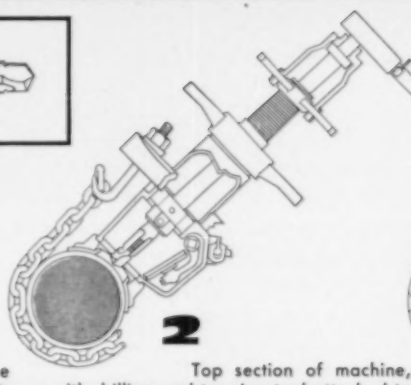
the inside story . . .

This time-proven method of drilling and tapping the main and inserting the stop under pressure guarantees trouble-free water service connections.



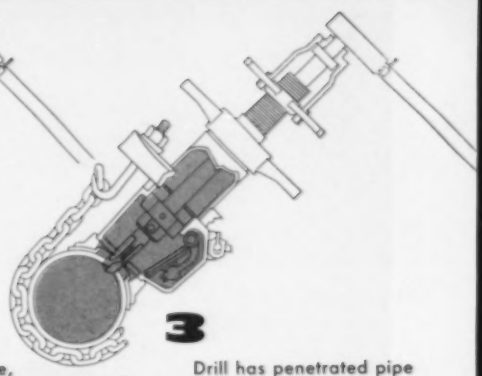
1

The bottom section of the machine containing the valve mechanism is secured to the main. The drilling and tapping tool is attached to the top section with boring bar assembly.



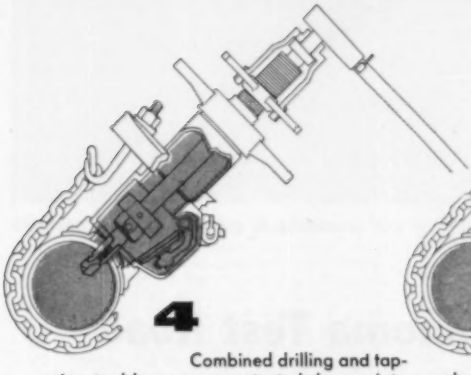
2

Top section of machine, with drilling and tapping tool attached to boring bar, is secured to base section. Flop valve has been opened and boring bar lowered to drilling position.



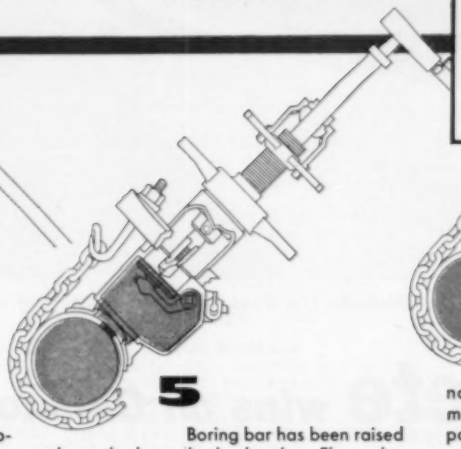
3

Drill has penetrated pipe wall—full water pressure is being controlled within entire body of machine. B-100 Machine can be either hand or power operated.



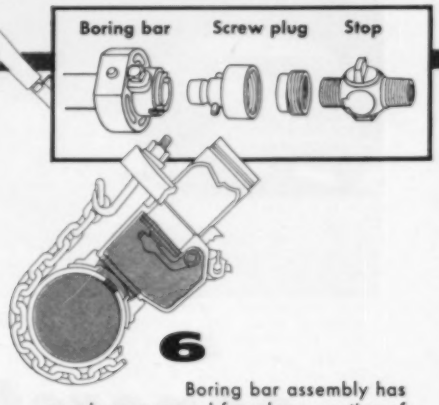
4

Combined drilling and tapping tool has now penetrated deeper into the main to cut accurate, matching threads for insertion of corporation stop.



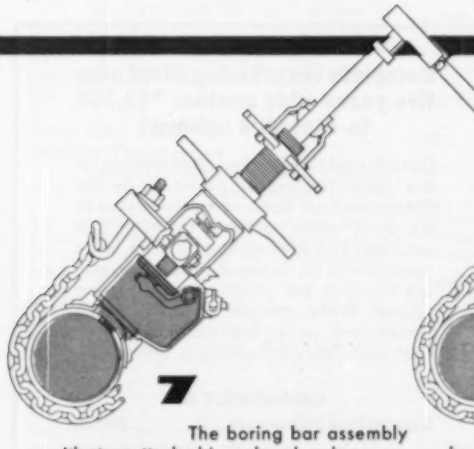
5

Boring bar has been raised above the lower body chamber. Flop valve is closed to confine water pressure to lower chamber. Entire boring bar assembly can now be removed without loss of water.



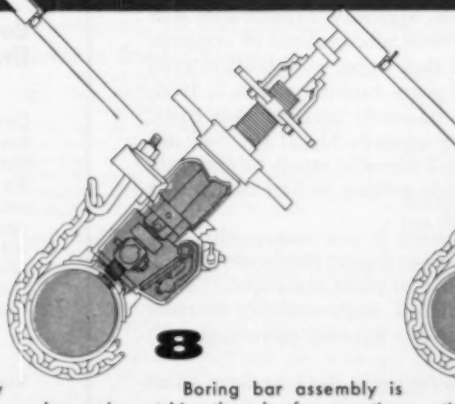
6

Boring bar assembly has now been removed from lower section of machine. At this point, the matching corporation stop is attached to the boring bar, replacing the drilling and tapping tool. Boring bar assembly can now be repositioned on machine without disturbing flop valve or water pressure.



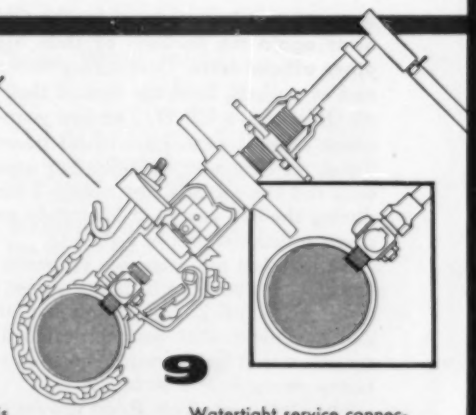
7

The boring bar assembly with stop attached is replaced on base section of machine. The precise alignment with the tapped hole is again assured for the insertion operation.



8

Boring bar assembly is lowered—matching threads of corporation stop and tapped hole allow easy, trouble-free insertion into main.



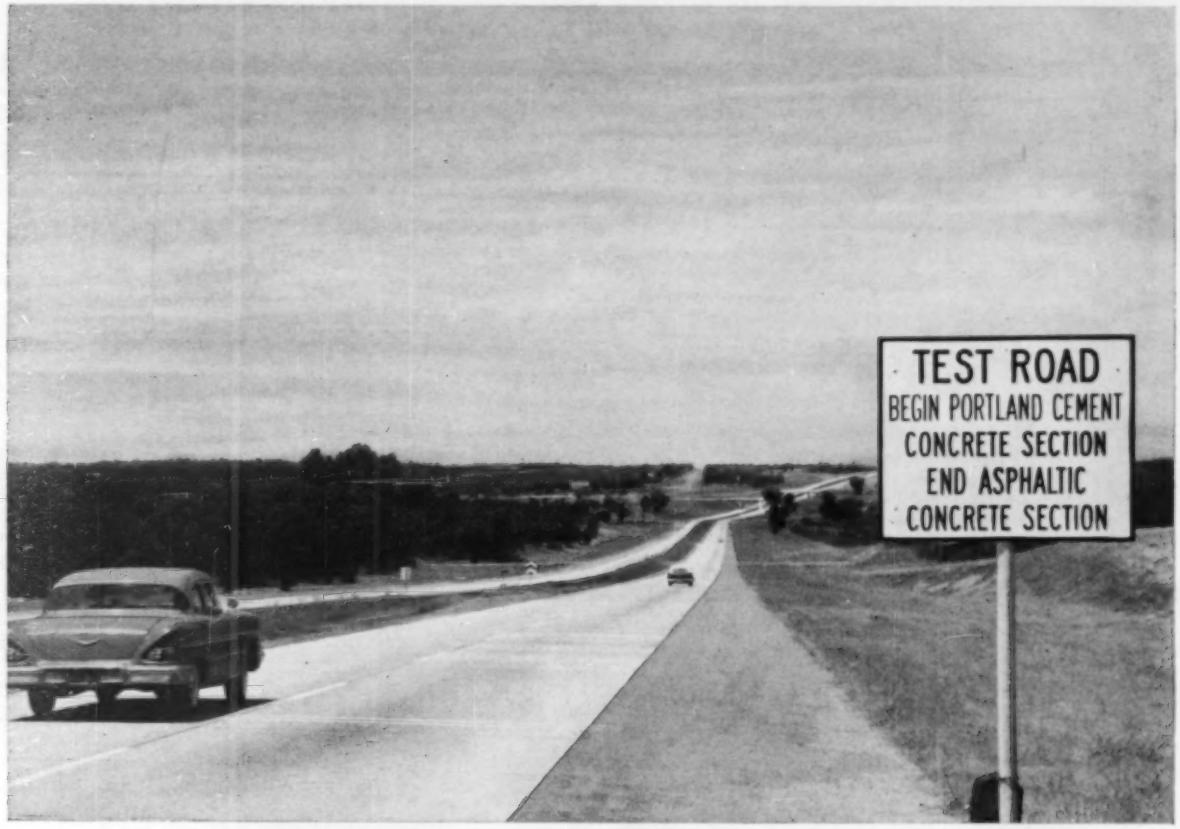
9

Watertight service connection to main completed. Machine can be removed and service piping attached to closed corporation stop. Stop is then opened to activate water service.

MUELLER CO. **DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

6374



The Oklahoma Test Road north of Oklahoma City will eventually be part of Interstate route 35

concrete wins on Oklahoma Test Road with maintenance cost 65% lower than asphalt!

5-year traffic test, ordered by the Oklahoma legislature, confirms again the findings of state highway departments and other official tests. Connecting two-mile sections of concrete and of asphalt, both the best of their type, were built in 1955 on Oklahoma's US 77. For five years beginning Jan. 1, 1956, exact records were kept of all *pavement* maintenance costs. Total for concrete: $557.82. For asphalt: $1,591.87. And not only did the asphalt cost nearly 3 times as much to maintain during the five years—it is already getting its first resurfacing at an additional cost of $43,753.

Substantial maintenance economy is one reason why concrete is the choice of so many states today. Engineers are designing concrete pavements to last 50 years and more. It's the one pavement that can be designed *mathematically* to meet specific wheel load requirements. It's the only pavement with beam strength and stability.

The Oklahoma Test Road proves again the long-term value of concrete pavements. The first cost isn't just a down payment. Concrete provides true economy for Interstate highways as well as for other heavy-duty roads.

Complete resurfacing after only five years adds another $43,753 to asphalt's upkeep!

Despite continued surface maintenance for five years, the asphalt pavement on the Oklahoma Test Road has deteriorated to the point where complete resurfacing is required. The asphalt sections are being overlaid with 1½ inches of surfacing to seal out moisture and provide a new wearing course. When comparison is made, as shown here, on the basis of *total upkeep* cost, concrete's advantage is dramatic.

CONCRETE	
5-year surface maintenance	$557.82
total surface upkeep	$557.82

ASPHALT	
5-year surface maintenance	$1,591.87
complete resurfacing	$43,753.00
total surface upkeep	$45,344.87

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 55.

Sewage and Solids Pumps

734 *Bulletin* No. 6006 catalogs the smaller sizes of Yeomans' newly expanded line of sewage and solids pumps, Series 6000. Pumps range in capacity from 50 to 500 gpm, and from 5 to 50 head-feet. For copy, write YEOMANS BROTHERS CO., 1999 N. RUBY ST., MELROSE PARK, ILL.

Hydraulic Refuse Packer

735 The features and benefits of this water-tight, sturdy, hydraulic refuse packer body, which is available with the Handi-Lift Container System, are detailed in this new folder issued by PAK-MOR MFG. CO., 1123 S.E. MILITARY DR., P. O. BOX 14147, SAN ANTONIO, TEXAS.

Sanitary Engineering Equipment

736 *Catalog* 952 is devoted entirely to equipment for water, sewage and industrial waste treatment. It includes within its 64 pages illustrations, schematic drawings, installations, applications of the full line offered by THE JEFFREY MFG. CO., COLUMBUS 16, OHIO.

New Refuse Loader-Packer

737 This new refuse handling unit completely and automatically dumps its load in just 9 seconds, features a single-cylinder hydraulic actuator which performs all load-packing-dumping operations, is available in 14-, 16- and 21-cubic-yard sizes. For details, write DOW PACKER CORP., 115 S. MAIN ST., FAIRVIEW, OKLA.

Ductile Iron Split Sleeve

738 News from JAMES B. CLOW & SONS, INC., 201-299 N. TALMAN AVE., CHICAGO 80, ILL., reports on this new product which permits easier, quicker, permanent repair of 4-, 6-, and 8-inch transverse cast-iron pipe underground breaks. Construction is two-piece, glandless.

Upgrade Your Water Treatment

739 Illustrated *Bulletin* 315-12 presents the Rex line of flocculation, clarification and sludge removal equipment for economical pre-treatment of water prior to filtration. It's available from CHAIN BELT CO., 4701 W. GREENFIELD AVE., MILWAUKEE, WIS.

Valve and Hydrant Maintenance Manual

740 KENNEDY VALVE MFG. CO., ELMIRA, N. Y., has compiled this manual of its products which conform to A.W.W.A. specifications. It provides detailed information in installation, inspection, maintenance and repair and serves as a valuable reference book.

Tractor Shovel

741 A specification bulletin explains the features that enable the new improved Model 404 Trojan tractor shovel to deliver maximum production for the user, combined with fast, economical operation. It has just been released by YALE & TOWNE MFG. CO., TROJAN DIV., BATAVIA, N. Y.

Concrete Streets Cracking?

742 Concrete is known for its compressive strength; steel for its tensile strength. That's why concrete slabs reinforced with steel welded wire fabric are 30% stronger, won't crack easily. For full information, write AMERICAN STEEL AND WIRE, DEPT. 1276, ROCKEFELLER BLDG., CLEVELAND 13, OHIO.

One Unit Street Patcher

743 Even the roller is truck mounted on this integrated, one-unit street patcher. With this job-proved assembly, you can prime the hole, place the asphalt mix, roll the patch. One man and the new Admiral asphalt street patcher can do a complete patching job that used to take several men and five pieces of equipment. For details, write ADMIRAL MACHINERY CO., 7900 IRVING AVE., S., MINNEAPOLIS 20, MINN.

Police Motorcycles

744 This 12-page booklet shows why a motorcycle-mounted police officer is more flexible and more efficient police power. It also illustrates and gives specifications for the Police Solo and Servi-Car manufactured by HARLEY-DAVIDSON MOTOR CO., MILWAUKEE 1, WIS.

Activated Sludge Process

745 *Bulletin* No. 7320 describes four recent equipment and flowsheet developments for the activated sludge waste treatment process. It's been issued by DORR-OLIVER INC., STAMFORD, CONN.

Low-Cost Ice Control Spreader

746 *Bulletin* A-466 gives complete description and specifications for this sand, salt and cinder trailer-type Safety Spreader, which quickly converts any municipal vehicle to emergency ice control service. For copy, write BAUGHMAN MFG. CO., JERSEYVILLE, ILL.

Portable Brush Chipper

747 City street and park divisions will find *Bulletin* C-3 of value. It describes this sturdy, dependable, and handy brush chipper, explaining how it cuts brush disposal time in half, and tells how to use brush chips as soil conditioner and mulch. Write GRUENDLER CRUSHER & PULVERIZER CO., 2915 N. MARKET ST., ST. LOUIS 6, MO.

New A-C Tractor Shovel

748 The HD-7G features power steering, power brakes, power shifting with an exclusive "ground speed control" governor. Capacity is 1¾ cubic yard. For literature giving complete information, write ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WIS.

Low-Cost Refuse Incinerator

749 New 6-page gatefold folder includes specifications, dimensions, size selection chart, etc. on Burn-O-Matic industrial refuse burners, which can be engineered to meet individual municipal requirements. For your copy, write INDUSTRIAL BLOW PIPE CO., P. O. BOX 5182, 2700 JACKSON AVE., MEMPHIS 12, TENN.

Community-wide Garbage Grinders

750 Sixty communities have eliminated garbage handling problems through mass installation of kitchen garbage grinders. GENERAL ELECTRIC CO., DISHWASHER AND DISPOSAL DEPT., MAJOR APPLIANCE DIV., LOUISVILLE 1, KY., will send, upon request, information on its Disposalls and on how to go about educating communities to the facts about garbage grinders and then getting them to act.

New Roadway Luminaire

751 WESTINGHOUSE ELECTRIC CORP., LIGHTING DIV., EDGEWATER PARK, CLEVELAND, OHIO, has introduced a new luminaire with open-bottom refractor composed of four individual quadrants. It's called Quadro-liner and controls the lighting pattern on urban and rural streets.

De-Icing with Rock Salt

752 Rock salt works three ways to get rid of ice and packed snow: it penetrates and breaks up ice; gives positive traction; undercuts the frozen mass, melting the bond between ice and snow. MORTON SALT CO., INDUSTRIAL DIV., DEPT. AC-11, 110 N. WACKER DRIVE, CHICAGO 6, ILL. will gladly provide full facts.

This Fire Hose Needs No Drying

753 It's jacketed 100% with Dacron, lightweight, durable, chemical resistant, impervious to mildew, easier to care for. TEXTILE FIBERS DEPT., E. I. du PONT DE NEMOURS & CO., WILMINGTON 98, DEL., has prepared a 4-page booklet that highlights this municipal fire hose.

Trims, Chips, Hauls

754 A combination aerial lift, chipper and dump truck body, developed to ease tree maintenance, reduce labor and equipment costs, and keep brush and tree limb disposal time down, is the subject of literature offered by ASPLUNDH CHIPPER CO., HAMILTON ST., CHALFONT, PA.

Water-Proof Coating for Reservoirs

755 Weathercoat forms a tough, tenacious coating that's odorless, nontoxic and moisture-proof. *Bulletin* B-22 details this impervious membrane for water-storage facilities and reports on construction and water-proofing of the 30-million-gallon Seneca Reservoir in East Oakland, Calif. Write AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

Cleans Catch Basins

756 *Bulletin* V-2 describes the new, one-man operated, push-button remote controlled Vac-All catch basin cleaner, which picks up water, heavy muck, rocks, etc. and is able to clean an 11-foot deep basin in minutes. Write CENTRAL ENGINEERING CO., INC., 4429 W. STATE ST., MILWAUKEE 6, WIS.

(See page 47 for more Bulletins)

L-M FLUORESCENT LUMINAIRES on Main Street, Lake Mills. Some 50 units are installed, on 70-foot-spaced staggered steel poles at 30-foot mounting height. Multiple 120/240 volt operation on a 2400/4160 volt system. The 160 watt lamps provide 10,900 lumens, with 2 footcandles on the street surface. The entire relighting program has cut snow removal costs and has almost eliminated break-ins and police calls.

L-M Street Lighting Cuts Police Calls Reduces Costs at Lake Mills, Wisconsin

New lighting with L-M luminaires has reduced crime in Lake Mills, cut snow removal costs, and the Suburbanaires give 20 to 25 times as much usable light on neighborhood streets, at actually a slightly lower cost than that of the old units that were replaced.

Break-ins and police calls are now practically non-existent. Planned additions to the police force have been found unnecessary.

Some 50 L-M fluorescent luminaires are used in the downtown area. L-M Suburbanaire units light the residential streets and alleys. The whole program was worked out with L-M Field Engineer M. L. Fennig by City Manager Frank Hill, and Carl Ravenhill, Superintendent of the Light and Water Department. This lighting program completely meets IES standards.

L-M offers a complete line of outdoor lighting equipment, plus Lighting Application Engineering Service. For information ask the L-M Field Engineer or Lighting Engineer; or write Line Material Industries, Milwaukee 1, Wisconsin. In Canada: CLM Industries, McGraw-Edison (Canada) Limited, Toronto 13, Canada.

L-M SUBURBANAIRE open-type luminaires are used in neighborhood streets. This view is at a school on East Prospect. Units provide Type I distribution, with 175-watt 7000-lumen mercury lamps. Mounting height 26 feet with 12-foot brackets. The Suburbanaire is an open-type low maintenance unit with scientifically designed reflector-refractor optical system, available in seven IES types. For mercury or incandescent, with or without photocontrol. A highly efficient, economical luminaire.

LM®

LINE MATERIAL® Industries

McGRAW-EDISON COMPANY

Outdoor Lighting

McGRAW-EDISON

537

DISTRIBUTION TRANSFORMERS · RECLOSERS, SECTIONALIZERS AND OIL SWITCHES
FUSE CUTOUTS AND FUSE LINKS · LIGHTNING ARRESTERS · POWER SWITCHING EQUIPMENT
PACKAGED SUBSTATIONS · CAPACITORS · REGULATORS · OUTDOOR LIGHTING
LINE CONSTRUCTION MATERIALS · PORCELAIN INSULATORS · FIBRE PIPE AND CONDUIT

ADDED BEAUTY FOR LOCATIONS like this. The Styled Mercury unit directs the light downwards and eliminates glare. It illuminates 11,000 square feet to 3 footcandles. You need fewer and shorter poles, and less wiring, to get the desired level of light.

ANOTHER IN THE FAMILY of modern Styled Mercury luminaires. The entire line is all-aluminum, with Holophane® refractor. Choice of 1000, 700 or 400 watt ratings. Available in choice of brushed aluminum finish or five decorator colors.

FOUR OF THE LATEST design units provide excellent nighttime illumination for traffic and pedestrians on this busy street in a shopping section.

L-M Announces Another Graceful Design In The New Styled Mercury Light Family

Line Material's Styled Mercury luminaires are a family of high quality, high intensity lighting units. The latest addition to the Styled Mercury line is the upsweep design installed in the well-lighted street shown above.

These are large, handsome luminaires, styled for Line Material by a noted industrial designer. They will contribute daytime beauty and excellent nighttime lighting to any street, park, mall, public square, or parking area.

Line Material is a leading manufacturer of outdoor lighting with 50 years' experience in the design and application of street and highway luminaires. L-M also provides competent Lighting Application Service by experienced lighting engineers.

MAIL COUPON FOR BULLETINS

Ask the L-M Lighting Engineer or Field Engineer for bulletins, or mail the coupon.

LINE MATERIAL® Industries
McGRAW-EDISON COMPANY
Outdoor Lighting

McGRAW-EDISON

522

DISTRIBUTION TRANSFORMERS · RECLOSERS, SECTIONALIZERS AND OIL SWITCHES
FUSE CUTOUTS AND FUSE LINKS · LIGHTNING ARRESTERS · POWER SWITCHING EQUIPMENT
PACKAGED SUBSTATIONS · CAPACITORS · REGULATORS · OUTDOOR LIGHTING
LINE CONSTRUCTION MATERIALS · PORCELAIN INSULATORS · FIBRE PIPE AND CONDUIT

Line Material Industries, Milwaukee 1, Wisconsin

Please send me details on L-M Styled Mercury family of luminaires and the new units. AC-111

Name_____

Company_____

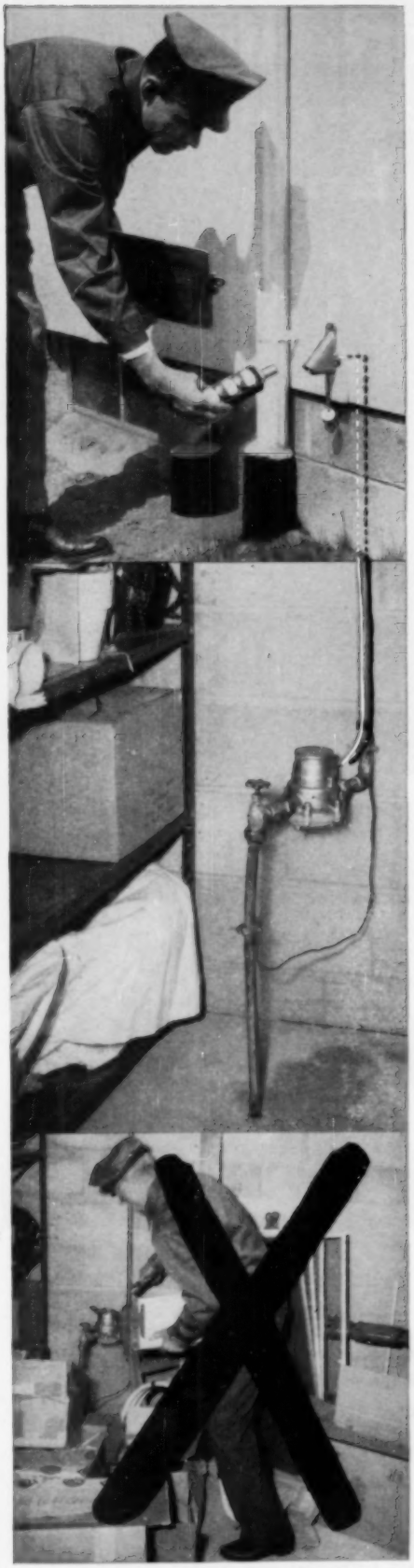
Address_____

City_____ State_____

Type of Area To Be Lighted_____

New "TELEREAD" makes meter reading a fast, simple, outdoor operation. The TELEREAD readout unit is simply inserted into a weatherproof plug mounted on the building exterior. Its self-contained battery power supply energizes a simple electric circuit to exactly transmit the reading shown on the remotely located water meter.

TELEREAD®



NEW ON AMERICAN WATER METERS . . .

TELEREAD remote reading systems now bring water meter reading out in the open

Here is an entirely new concept in water meter reading. Whether the customer is at home or away, *every* meter is read *on time*. Water consumption figures are complete every billing period.

The new TELEREAD increases each man's productive reading capacity. Doorbell waiting time and call-backs are eliminated. The large easy-to-read dials on the "Read-out" unit increase reading speed and assure accuracy. The unit, about the size of a flashlight, is plugged into the outdoor receptacle . . . and there's the reading. It's as simple as that.

Customers, too, welcome the modern TELEREAD method of meter reading. The hazard of admitting strangers under the guise of a meter reader is over. Household routine is not interrupted. Staying home on meter reading day is no longer necessary. Disagreeable company-customer relationships created so often by old fashioned meter reading are a thing of the past. Worry-free, trouble-free water service that builds good will, becomes a reality.

- **Faster... Easier... More Readings per Day**
- **No added Mechanical Load on the Meter to Impair Accuracy**
- **Low-Cost, Maintenance-Free Installation**
- **Eliminates Call-Backs**
- **Same Dependable AMERICAN Water Metering Accuracy**
- **Builds Better Public Relations**
- **Entire Installation is Weather, Water and Dust-Proof**

Let us send you complete cost-saving information. Mail handy coupon today.

BUFFALO METER COMPANY, INC.
2902 Main Street, Buffalo 14, N. Y.

Yes, we are interested in the new TELEREAD Method of Water Meter Reading. Rush complete information.

Name _____ **Position** _____

Company _____

Address _____

City _____ **Zone** _____ **State** _____

SUBSIDIARY of AMERICAN METER COMPANY

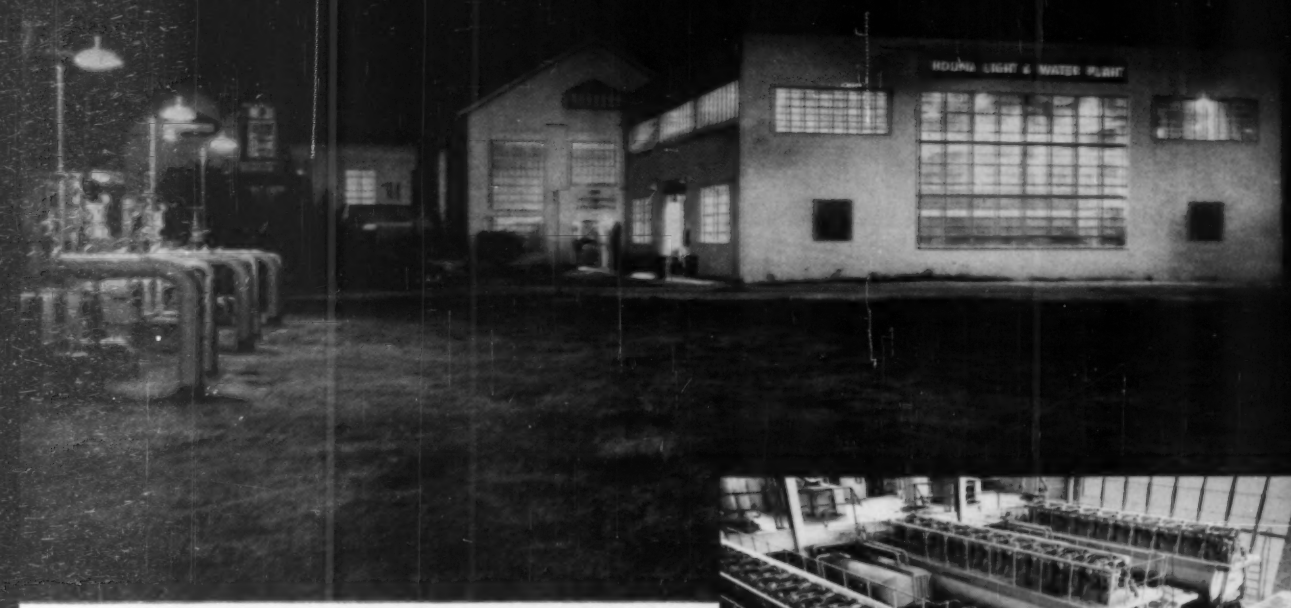
BUFFALO METER COMPANY, INC.

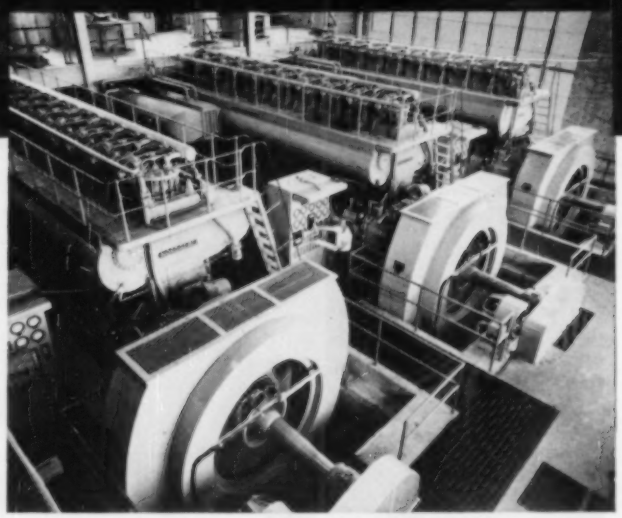
2902 MAIN STREET • BUFFALO 14, N.Y.

200 NORTH GILBERT AVENUE • FULLERTON, CALIF.

Sales representatives throughout the nation

HOUMA LIGHTS ITS WAY
with Nordberg engines totaling 25,350 hp





Houma, long known as the shrimp center of Louisiana, has built its municipal power plant around Nordberg engines . . . and has eliminated the necessity for purchased power.

Power demands in Houma have grown steadily since 1949 when the first three 2,000 hp Nordberg natural gas burning engines were added to their 2,900 hp plant. Today, with only two of the original five oil burning engines in use, Houma's 15,800 kw peak load is satisfied by an additional four Nordberg units, the last three being big 10 cylinder, dual fuel engines rated at 5,250 hp each.

When *you* need *long term*, *dependable* power, consult Nordberg. See why there are so many *repeat orders* like those for the City of Houma for Nordberg Diesel, Duafuel, and Spark-Ignition gas engines, in sizes to over 12,000 hp.

INSTALLATION DATA:

1949—installed 3 Nordberg 2,000 hp engines.
1954—installed Nordberg 3,600 hp engine.
1959—installed 3 Nordberg 5,250 hp Duafuel engines.

NORDBERG MANUFACTURING COMPANY • Milwaukee 1, Wis.

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS
SAN FRANCISCO • TAMPA • WASHINGTON • WICHITA, KAN. • TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D. F.

©1961, N.M.CO.

P161

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Centering Tripod

757 *Brochure* K607 describes an unusual centering tripod that levels and centers surveying instruments in seconds and accurately. Its ball-and-socket head assures stability. For copy giving full details, write KERN INSTRUMENTS, INC., 120 GRAND ST., WHITE PLAINS, N. Y.

Tee Off—At Night!

758 Municipal golfers will be able to do so—and play the full 18 holes—if the municipal golf course is Wide-Lite floodlighted, and there'll be increased revenue for the course. For full information, write WIDE-LITE CORP., DEPT. JA1, 4114 GULF FREEWAY, HOUSTON, TEXAS.

Above-Ground Water Storage

759 CHICAGO BRIDGE & IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL., fabricator of elevated water storage facilities, has prepared *Bulletin* A-40, to help you investigate the cost benefits of having up-to-date water storage facilities in your community.

Area Lighting Reference

760 *Bulletin* GET-3100 describes basic functions of luminaires (street lighting and floodlighting types) with photometric data and sample problems for roadway lighting and area lighting applications. Tables of lamp data and economic considerations for design selection are included. Write GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

Warning Lights

761 Transistorized warning lights that can be seen clearly for one-half mile and more even under poor weather conditions are presented in this "Blink-N-Beacon" catalog sheet along with vertical and horizontal barricades. Write ELECTRONICS DIVISION OF BARLER, INC., GOSHEN, IND.

Cast Iron Pipe

762 Cast iron water mains and sewers have been providing efficient, dependable service of more than a century at low maintenance costs. WOODWARD IRON CO., WOODWARD, ALA., is prepared to explain the qualities and characteristics of this pipe and to provide you with information.

Snow and Ice Problems?

763 GOOD ROADS MACHINERY CORP., MINERVA, OHIO, manufacturer of snow plows and road spreaders has prepared a booklet on the "Rollgate" TG 500, a hydraulically-driven, all-weather spreader capable of performing well on snow and ice operations.

Precise Surveyor's Transit

764 *Booklet* T-1A supplies the facts about this optical repeating transit with the speed, precision and ruggedness that's needed for land, route and highway surveys. For a copy, write WILD HEERBRUGG INSTRUMENTS, INC., PORT WASHINGTON, N. Y.

New Dozer Engine Option

765 A 70-hp diesel engine designed to increase the flexibility and production of the "Michigan" Model 180 tractor dozer has been announced by CONSTRUCTION EQUIPMENT DIVISION, CLARK EQUIPMENT CO., PIPESTONE PLANT, BENTON HARBOR, MICH. The General Motors Model 6V-53 features 2-stroke engine and cycle, unit injector fuel system. Literature gives details.

Planning Aids for Street, Highway Lighting Projects

766 Seven catalogs offered by KERRIGAN IRON WORKS CO., DEPT. A-11, NASHVILLE, TENN., give full engineering data, describe and illustrate round tapered aluminum shafts, steel and aluminum octagonal standards, traffic signal structures, strain poles, brackets and mast arms, overhead sign supports.

Snow Plow for Trucks and Wheel Loaders

767 An automatic trip edge snow plow for trucks and Caterpillar wheel loaders "rides over" obstructions, without damage to plow or strain on power unit, and maintains its load. For specification sheet, write BALDERSON INC., WAMEGO, KANS.

Valves and Hydrants

768 IOWA VALVE CO., OSKALOOSA, IA., has prepared detailed literature on its full complement of precise-fitting, easy-to-assemble valves and hydrants for municipal water service use.

New Automatic Parking System

769 A re-designed gate-controlled parking system for municipal parking lots, called "Low-Boy" combines the advantages of low initial cost, economical "cheatproof" operation without attendants, minimum maintenance and wide choice of parking controls. Write PARCOA DEPT. AMC, JOHNSON FARE BOX CO., 4619 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

(See page 50 for more Bulletins)

NOW YOU CAN OWN 3 BUSINESS RECORDING MACHINES FOR THE PRICE OF 1

GELOSO

STENOTAPE 3/10

3 Speeds / 10 hour Dictation with Remote Dictation / Transcription Controls

Its advanced electronic design makes it a 3-way machine: conference recorder (at 15/16 ips), standard office unit (at 1⅞ ips) and personal hi-fi tape recorder (at 3¾ ips). Weighing only 13 lbs., this is the most versatile compact business recording machine you can own. For correspondence, meetings, sales training programs, audio-visual presentations, post-graduate digests, language labs, and personal entertainment. So sensitive, the 3/10 records 30 feet away—records music with concert hall realism. It's completely compatible with all StenOtape units and standard tape recorders.

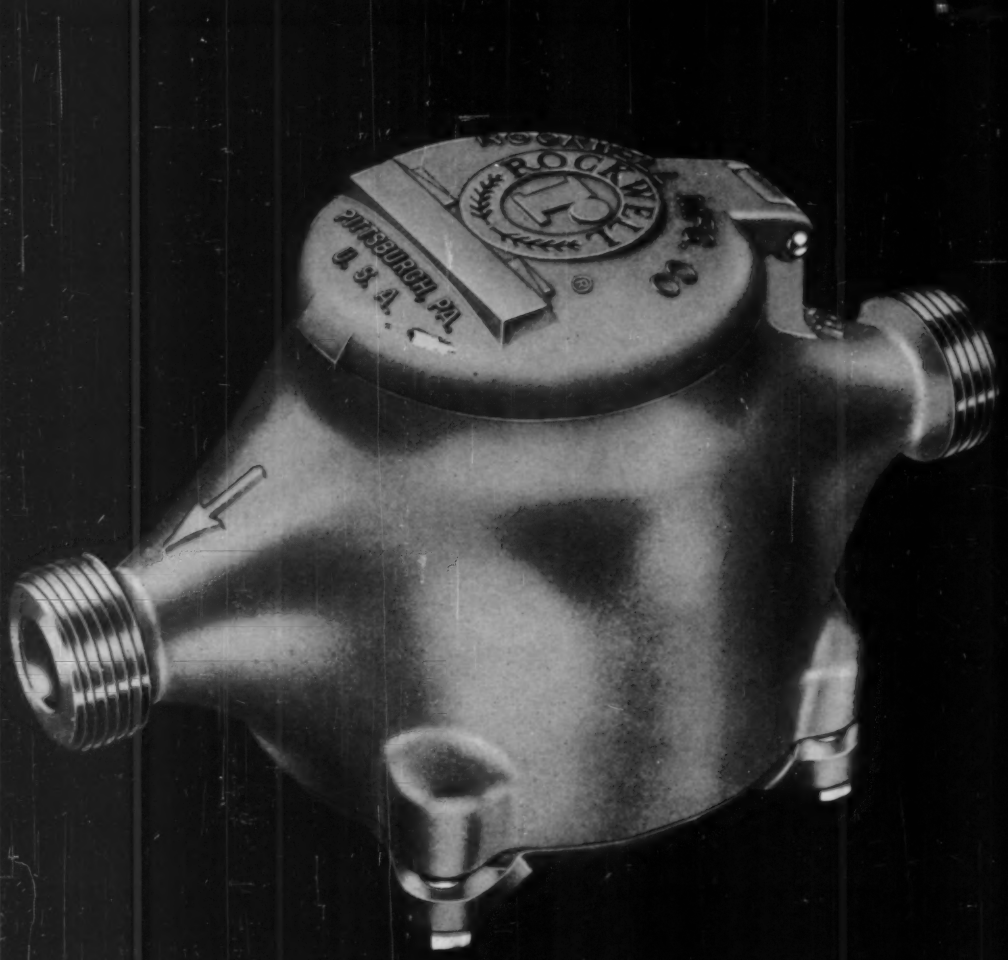
Complete with remote control microphone for dictation; reel of tape and take-up reel. Accessories available for remote control transcription. $249.95 Plus FET FULL YEAR GUARANTEE

Ask your dealer to demonstrate the versatile StenOtape 256 Dictation Transcription office machine. Compatible partner of the 3/10.

AMERICAN GELOSO ELECTRONICS, INC., Dept. 312
251 Park Avenue South • New York 10, N. Y.
In Canada: CANADIAN GELOSO ELECTRONICS, LTD.
700 Weston Rd., Toronto 9, Ontario

Give me a complete rundown on the StenOtape 3/10 and tell me where I can get in touch with my nearest dealer.

Name_____
Company_____
Address_____ Tel._____
City_____ Zone_____ State_____



ROCKWELL SEALED REGISTER* METERS

Imitated, but never equalled

The Rockwell Sealed Register* "Magnetic" meter is *not* an adaption of any previous design.

Starting from scratch, Rockwell engineers could and did develop an all-new meter—one that did not compromise any desirable feature.

For instance, they materially *reduced* the number of working parts *instead of adding more.* They made this meter tamper-proof. Greater accuracy was engineered into the design.

From a maintenance standpoint, the Rockwell Sealed Register* meter is by far the *easiest* and *most economical to repair.*

Let our representative prove these facts to you or write for bulletin W-811.

For prompt shipment from warehouse stocks contact Rockwell Manufacturing Company, Department 159L, Pittsburgh 8, Pennsylvania. In Canada: Rockwell Manufacturing Company of Canada, Ltd., Box 420, Guelph, Ontario.

**Trade mark*

SEALED REGISTER* METERS

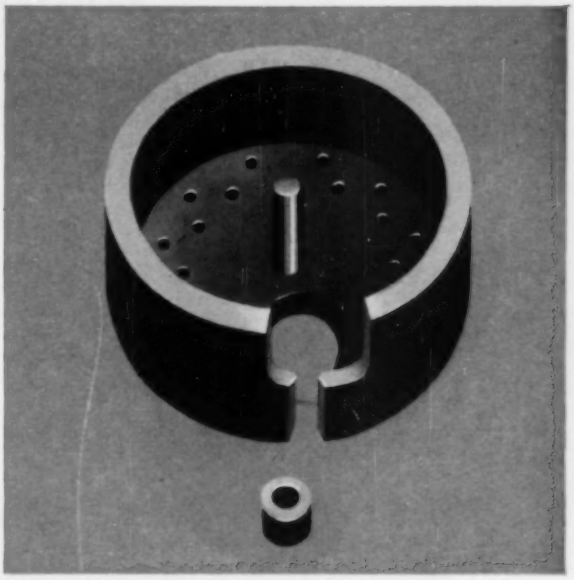
another fine product by

ROCKWELL

4 good reasons why you're dollars ahead using the only completely new "magnetic" meter

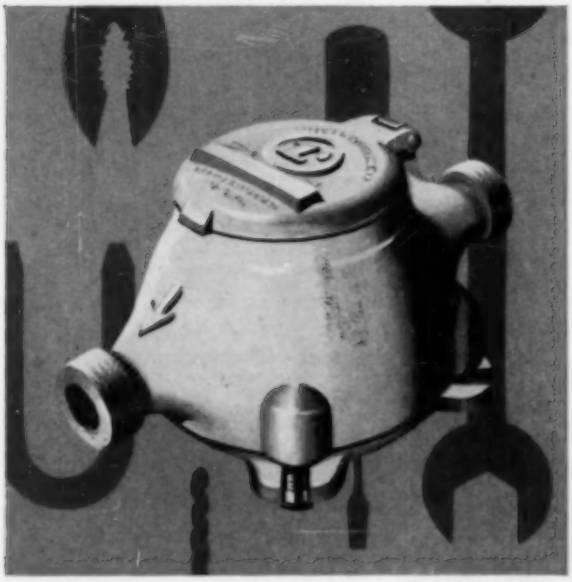
STRAIGHT LINE MAGNETIC DRIVE

A simple, powerful magnetic coupling transmits every motion of the measuring chamber directly to the sealed register in a vertical line. The permanent Alnico magnets are completely sealed. Their strength will not deteriorate with time.



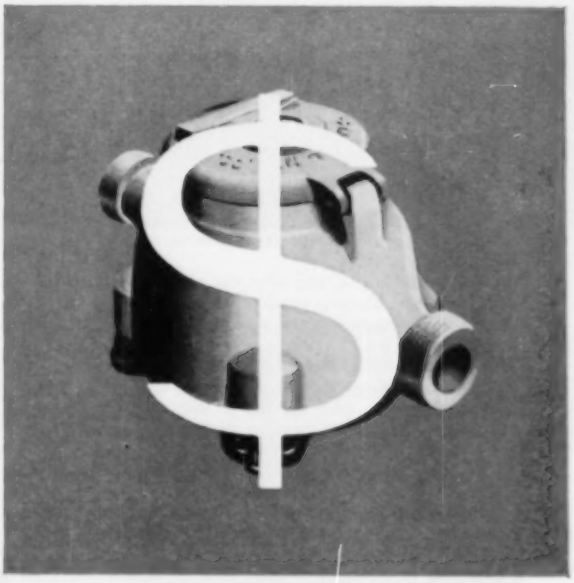
ONLY TWO REPAIR PARTS NEEDED

The piston and piston roller are the only parts operating in water. These two parts are all you need to carry in inventory as compared to the large number required to repair other meters. Using only a wrench, anyone can replace these parts fast.



COMPLETELY TAMPER-PROOF

The sealed register is recessed into the main casing. Even if dismantled, the meter won't work without the register and the register won't turn without the meter. With this meter you'll stop tampering—stop losing important revenue.



COST NO MORE, EARN MORE, SAVE MORE

These better "magnetic" meters cost you no more to buy and cost you much less to maintain than other types of more complicated design. Since they have the fewest parts to wear they are easiest and most economical to repair.

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Lift, Carry, Place

770 It's easy when an A-W hydraulic crane is on the job, assuring easy maneuverability with all-wheel steer, long reach, big load capacity, continuous full circle boom rotation. For facts on 3 models, applications, attachments, etc., write AUSTIN-WESTERN CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

Radar Traffic Camera

771 A new, portable unattended roadside radar-camera automatically monitors traffic speed and flows. It reads speeds up to 100 mph, requires no focusing, uses standard 35mm roll film. For details on the Borkenstein Radar Traffic Camera, write REX METAL CRAFT, INC., 1717 GENT AVE., INDIANAPOLIS 2, IND.

Hot-Mix Asphalt Plant

772 In this 16-page booklet, CUTLER ENGINEERING CO., 5435 W. 63RD ST., CHICAGO 38, ILL., presents its 25 and 40-ton per hour fully portable hot mix asphalt plants, designed to serve the special needs of city street departments, parking lot pavers, highway maintenance departments.

Aerial Lift Catalog

773 This bulletin discusses the Servi-Lift aerial lift in terms of safety, stability, compactness, versatility, insulation, simplicity of use. Includes general characteristics of models. For copy, write HUNT-PIERCE CORP., 59 MEADOW ST., MILFORD, CONN.

Ice, Snow, Frost Detector

774 A new electronic device continuously checks the surface of a roadway or bridge for ice, snow or frost formation and automatically illuminates advance warning signs to warn approaching motorists of this condition. The completely transistorized unit automatically de-energizes the warning signs when these hazardous conditions no longer exist. Write KAR-TROL SIGNAL CO., INC., 12739 S. MAIN, HOUSTON 35, TEXAS.

Trouble-Free Water Service Connections

775 MUELLER CO., DECATUR, ILL., design-matched its B-100 tapping machine, tapping tools and corporation stops to work together to provide dependable and economical water service connections. Available literature explains the teams' operation.

Stumped by a Tree Stump?

776 Some 800 cities have discovered the easy, economical way to remove unwanted stumps. They rip them to shreds in minutes, 10 feet below ground level, with a one-man operated Pow-R-Stump Cutter. VERMEER MFG. CO., PELLA, IA., will send literature on request.

Refuse Collection

777 In this 12-page, illustrated booklet you'll find efficient systems for all types of refuse disposal—60 Series packer bodies, push-out bodies, container systems, transfer trailers. It's a new publication available from HOBBS TRAILERS, 609 N. MAIN, FORT WORTH, TEXAS.

Earth Excavation, Concrete Placement

778 This bulletin will introduce some important advances in specialty machines for earth excavation and concrete placement, among them new improvements in extruded concrete pipelines. For a copy, write R. A. HANSON CO., INC., PALOUSE, WASH.

Aeroil's Winter Equipment Bulletin

779 Designed as a convenient file folder, *Bulletin* WE-1 gives complete details Aeroil space heaters, salamanders, LPG and oil-fired thawing torches, steam thawers and portable water heaters. For copy, write AEROIL PRODUCTS CO., INC., 69 WESLEY ST., S. HACKENSACK, N. J.

Street Lighting Equipment

780 You can now obtain catalog information and technical data on 2600 Series Endoval and 2500 Series Urbanoval luminaires, a new family of *unitized* oval mercury luminaires for high-level and low-level street lighting applications. Write REVERE MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

New 4-Way Communications Unit

781 This unit combines siren, mobile public address system, radio amplifier and a high-pitched "yelper." It's just been introduced by FEDERAL SIGN AND SIGNAL CORP., 13601 S. WESTERN AVE., BLUE ISLAND, ILL. to provide greater flexibility for official agencies in meeting emergency and safety situations.

(See page 52 for more Bulletins)

MH Roll-call for water

Why Did Washington Recross the Delaware?

In 1776, General George Washington and his army crossed the Delaware river twice. The first time he was in retreat from British victories in New York. The second time was on the night of Christmas Day when he surprised and defeated the British at Trenton and Princeton, N. J. This turn of the tide of war heartened all American colonists, brought recruits flocking to join the American army and encouraged foreign sympathizers.

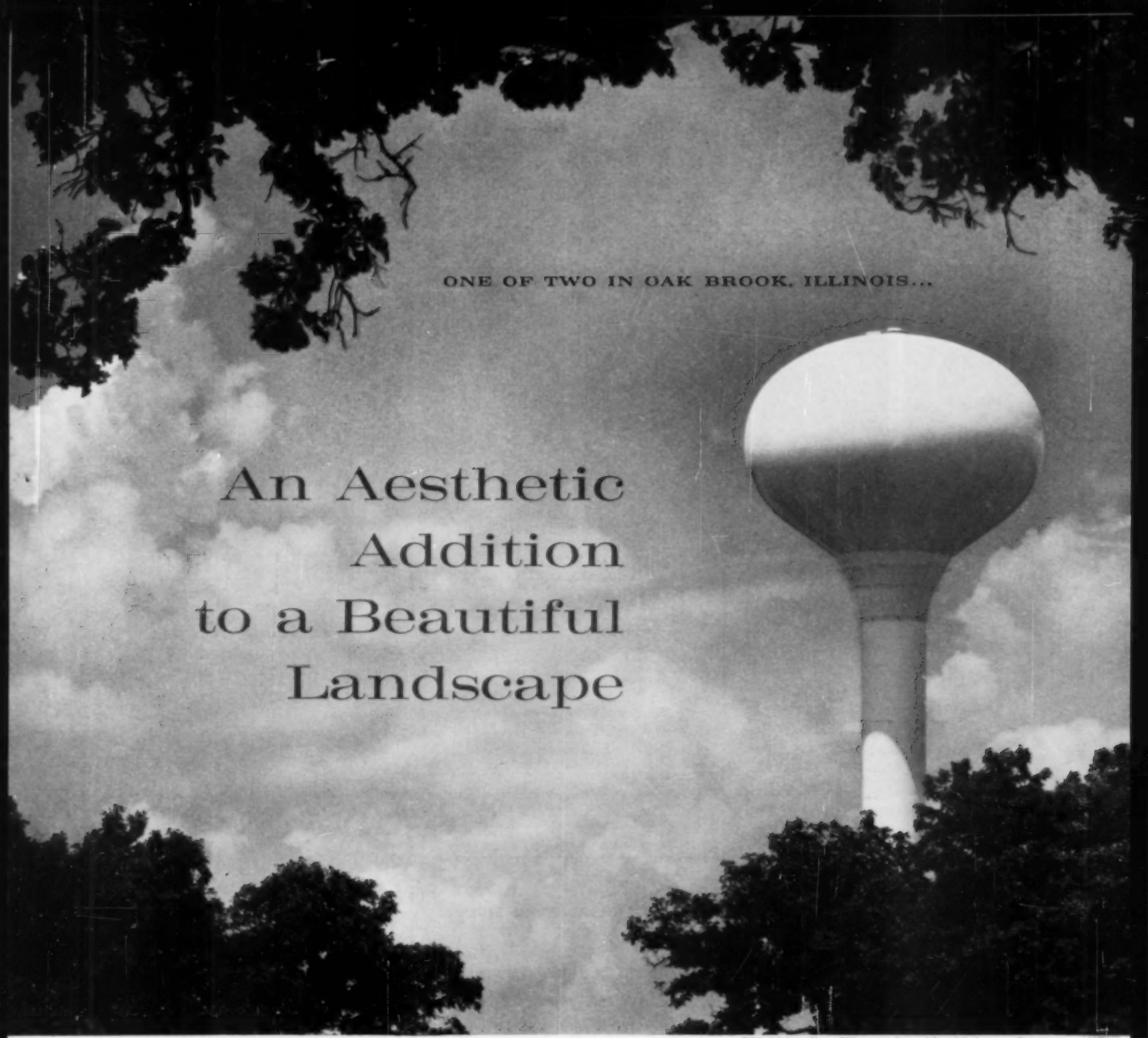
Today, Britain is our ally, but there are other nations which are not. Imagine what an atomic war might do to the great cities of these thickly populated South Atlantic states, where in 1607 the "English speaking race cast first root overseas and the United States began."

In these 8 states and the District of Columbia there are 100 water works, each serving 25,000 or more customers. Authorities rate 51 of them as adequate in facilities, 14 as doubtful and 35 as deficient!

America's peacetime shortage of water distribution facilities is a serious threat to a rapidly growing economy. But a wartime shortage of water distribution facilities could be fatal to the Nation's existence. As General Washington turned the tide of war, so must we do now in regard to water distribution facilities.

South Atlantic States
Delaware
Maryland
District of Columbia
Virginia
West Virginia
North Carolina
South Carolina
Georgia
Florida

M&H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
A WALWORTH SUBSIDIARY



An Aesthetic Addition to a Beautiful Landscape

UNITED STATES PATENT NO. D-190,464

250,000-gallon Waterspheroid, 130 feet to bottom.

Oak Brook, Illinois, west of Chicago and famous as a polo center, is also gaining a reputation as a pleasant location for offices and research laboratories.

To fulfill the anticipated water pressure requirements for fire protection and general service for the area, the village recently selected two CB&I 250,000 gallon steel Waterspheroids.

This is another example where the attractive CB&I Waterspheroid,® available in capacities up to 1,000,000 gallons, or its little brother, the famous CB&I Watersphere® with capacities from 25,000 to 250,000 gallons, complements natural surroundings.

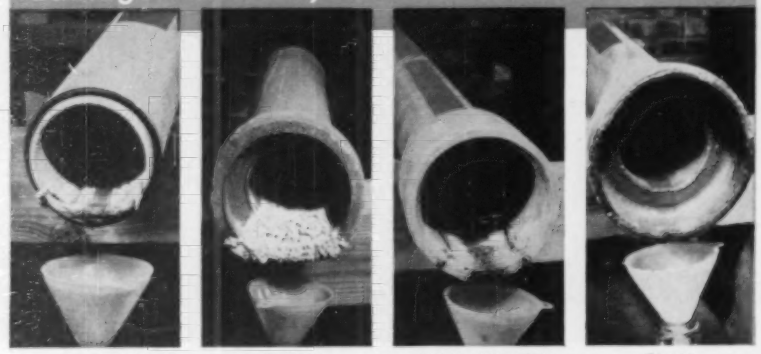
Investigate the cost benefits of having this modern water storage facility in your community. Write for Bulletin A-40. Chicago Bridge & Iron Company, 332 S. Michigan Ave., Chicago 4, Ill. Offices and subsidiaries throughout the world.

CB&I **Waterspheroid**

CB-6123

only CLAY meets the ACID TEST!

Unretouched* photos show corrosion damage caused by the flow of acid solution.



CEMENT-ASBESTOS | CONCRETE | CEMENT-ASBESTOS FOREIGN | CLAY

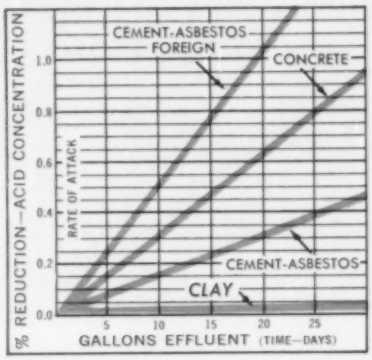
*Manufacturers' brand names deleted.

It's sulphuric acid that destroys sewer lines made of materials bought as substitutes for lifetime Vitrified Clay Pipe. And sulphuric acid—which combines chemically with the binding material in other products to disintegrate them—can't hurt Vitrified Clay, a completely inert material.

Special tests at the Clay Pipe Industry's modern laboratory at Crystal Lake, Illinois, recently illustrated just how damaging this acid concentration can be.

As you can see in these photographs and the chart, the acid started eating up the substitute materials quickly. But it didn't do a thing to lifetime Vitrified Clay.

It's a simple test. Try it yourself before you specify any product for your sanitary sewers other than Vitrified Clay. We just pumped 30 gallons of 8.6 percent sulphuric acid by weight through four different pipe specimens



—in this case, domestic cement-asbestos, concrete, foreign cement-asbestos and clay.

Remember, you can't argue with the facts, and you can't repeal the laws of science. Sewer gas and oxygen are present in all sanitary sewers. And sewer gas and oxygen combined add up to sulphuric acid, which destroys substitutes for Vitrified Clay Pipe.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Ave., Washington, D. C.

Please send me full details on the results of the acid tests on the four sewer pipe materials shown here.

(name)

(company)

(street address)

(city and state)

B-6C23 AC

COMPRESSION SEALED, VITRIFIED
CLAY PIPE
IMPERVIOUS
THE STANDARD in SANITARY SEWERS

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Avenue, N.W.
Washington 6, D. C.

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Carryable Pumps and Generators

782 There's a carryable Homelite pump and generator to match your exact job requirements. This 4-page bulletin gives details on the new, economical 4-cycle engine-driven carryable pumps and generators. For copy, write HOMELITE, a division of TEXTRON, INC., PORT CHESTER, N. Y.

Police Uniform Fabrics

783 When you specify Franklin worsteds for your police and fire department uniforms, you specify top quality fabrics, uniform in shade, stock dyed, and fast in color. For full information, write DAVID E. SINGER, SALES AGENT, FRANKLIN WORSTED CO., 40 E. 34th ST., NEW YORK 16, N. Y.

Residual Chlorine Indicator

784 The new Series A-780 indicator for measuring chlorine residuals is an electro-chemical instrument which analyzes treated water continuously. It offers flexible control arrangements. For complete information, write WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. J.

Neither Mud Nor Snow

785 . . . will mire your municipal cars and trucks this winter, if they're equipped with limited slip differentials. DANA CORPORATION, TOLEDO 1, OHIO, has prepared a booklet that describes how and where limited slip differentials work and their benefits. It's yours for the asking.

New Manhole Riser Cushion

786 This product combines steel and rubber to end noise and reduce wear or worn manhole covers and frames by absorbing dissipating road shock from heavy traffic, thus eliminating costly manhole repair. For literature, write UTILITIES SUPPLY DIV., CENTRAL STATES INDUSTRIAL SUPPLY CO., TERMINAL TOWER, CLEVELAND 13, OHIO.

Hydraulic Truck-Mounted Crane

787 *Form* No. 600-A gives specifications, truck requirements, and highlights features of Model 58, an addition to the Hydra-Lift line manufactured by PITMAN MFG. CO., GRANDVIEW, MO. Twelve-page *Form* No. 600 details other models in the Hydra-Lift line.

Sturdy Steel Wire Fence

788 Designed for long-lasting protection and galvanized to prevent corrosion, Realock chain link fence provides safe, permanent way to protect municipal property. THE COLORADO FUEL AND IRON CORP., DENVER, COLO., OAKLAND, CALIF., BUFFALO, N. Y. reports that it's available in several styles, and will supply full facts.

Self-Regulating Distribution Transformer

789 *Bulletin* 61202 covers the new self-regulating transformer (SRT) manufactured by LINE MATERIAL INDUSTRIES, 700 N. MICHIGAN, MILWAUKEE 1, WIS., and thoroughly explains its connection versatility and location flexibility. Application, operating and design features are included.

(See page 59 for more Bulletins)

clears up an age-old problem

Neither fogging nor clouding can ever prevent the easy reading of the new Badger magnetic drive meter. Easy-Read's register is hermetically sealed against dirt, dust, water and vapor.

Easy-Read has the biggest, most readable face yet to appear on the market. Its permanent digits stand a full ¼" tall. A special heavy tempered glass lens protects Easy-Read's face and preserves the seal. The tempered glass is highly resistant to breakage and scratching.

Badger has added still another unique design feature: the Easy-Read register is removable, even while the meter stays in the line.

Ask your Badger representative for full details and an Easy-Read demonstration.

The new Easy-Read can be ordered in split-case (⅝" thru 2") or frostproof models (⅝" thru 1" x 1¼")

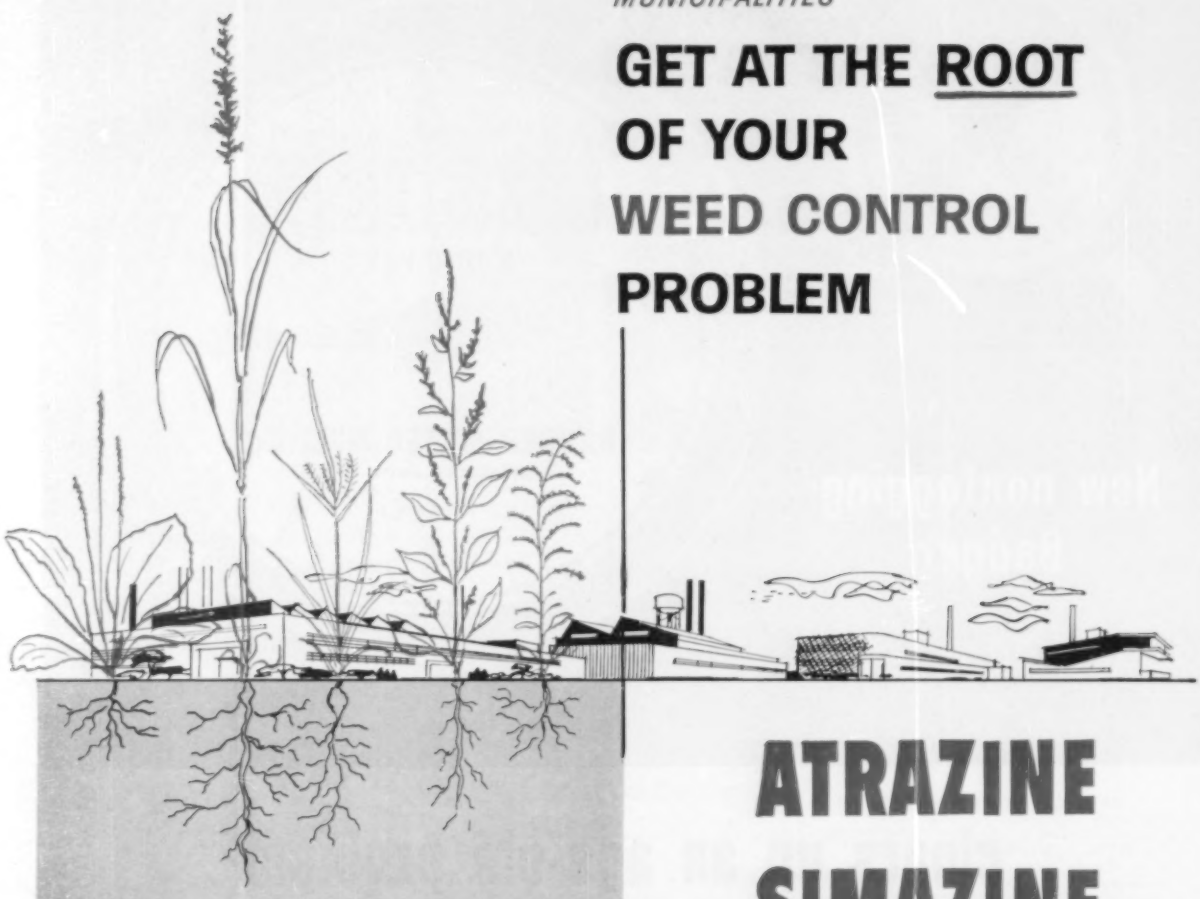
Badger Meter Mfg. Company

4545 West Brown Deer Road • Milwaukee 23, Wisconsin

GEIGY—creators of chemicals for modern agriculture

MUNICIPALITIES

GET AT THE ROOT OF YOUR WEED CONTROL PROBLEM



ATRAZINE
SIMAZINE

HERBICIDES

Geigy industrial herbicides make possible full season weed control from one application.

Atrazine or Simazine controls both broadleaf weeds and grasses—are non-irritating and low in toxicity to humans and animals. Both provide ease and economy in use.

Plan now to get at the root of your weed control problem. Your supplier has Geigy industrial herbicides in wettable powder or granular form. For free information call him today or write—Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation, Saw Mill River Road, Ardsley, New York.

Geigy ORIGINATORS OF DDT INSECTICIDES

GEIGY AGRICULTURAL CHEMICALS

Division of Geigy Chemical Corporation • Saw Mill River Road, Ardsley, N.Y.

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

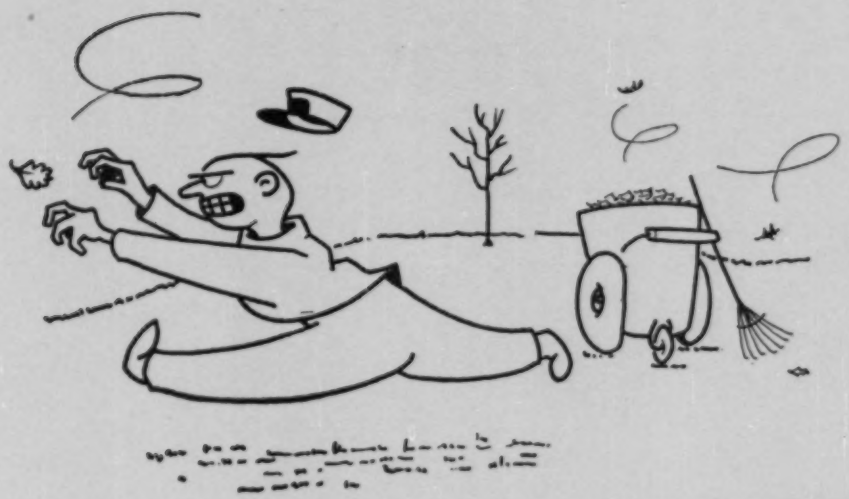
Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 291, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Reader's Service Dept.



ALWAYS ON THE RUN?

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 41

734	747	760	773	786	799	812	825	838	851	864	877
735	748	761	774	787	800	813	826	839	852	865	878
736	749	762	775	788	801	814	827	840	853	866	879
737	750	763	776	789	802	815	828	841	854	867	880
738	751	764	777	790	803	816	829	842	855	868	881
739	752	765	778	791	804	817	830	843	856	869	882
740	753	766	779	792	805	818	831	844	857	870	883
741	754	767	780	793	806	819	832	845	858	871	884
742	755	768	781	794	807	820	833	846	859	872	885
743	756	769	782	795	808	821	834	847	860	873	886
744	757	770	783	796	809	822	835	848	861	874	
745	758	771	784	797	810	823	836	849	862	875	
746	759	772	785	798	811	824	837	850	863	876	

I would also like to receive manufacturer's booklets on.....

.....

.....

.....

Name: (Please Print).....

Title:.....

Address:.....

..... 11-61

A Listing of Your Business Connection is Important

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 41

734	747	760	773	786	799	812	825	838	851	864	877
735	748	761	774	787	800	813	826	839	852	865	878
736	749	762	775	788	801	814	827	840	853	866	879
737	750	763	776	789	802	815	828	841	854	867	880
738	751	764	777	790	803	816	829	842	855	868	881
739	752	765	778	791	804	817	830	843	856	869	882
740	753	766	779	792	805	818	831	844	857	870	883
741	754	767	780	793	806	819	832	845	858	871	884
742	755	768	781	794	807	820	833	846	859	872	885
743	756	769	782	795	808	821	834	847	860	873	886
744	757	770	783	796	809	822	835	848	861	874	
745	758	771	784	797	810	823	836	849	862	875	
746	759	772	785	798	811	824	837	850	863	876	

I would also like to receive manufacturer's booklets on.....

.....

.....

.....

Name: (Please Print).....

Title:.....

Address:.....

..... 11-61

A Listing of Your Business Connection is Important

IT'S A BREEZE!

Postage Will be Paid by Addressee

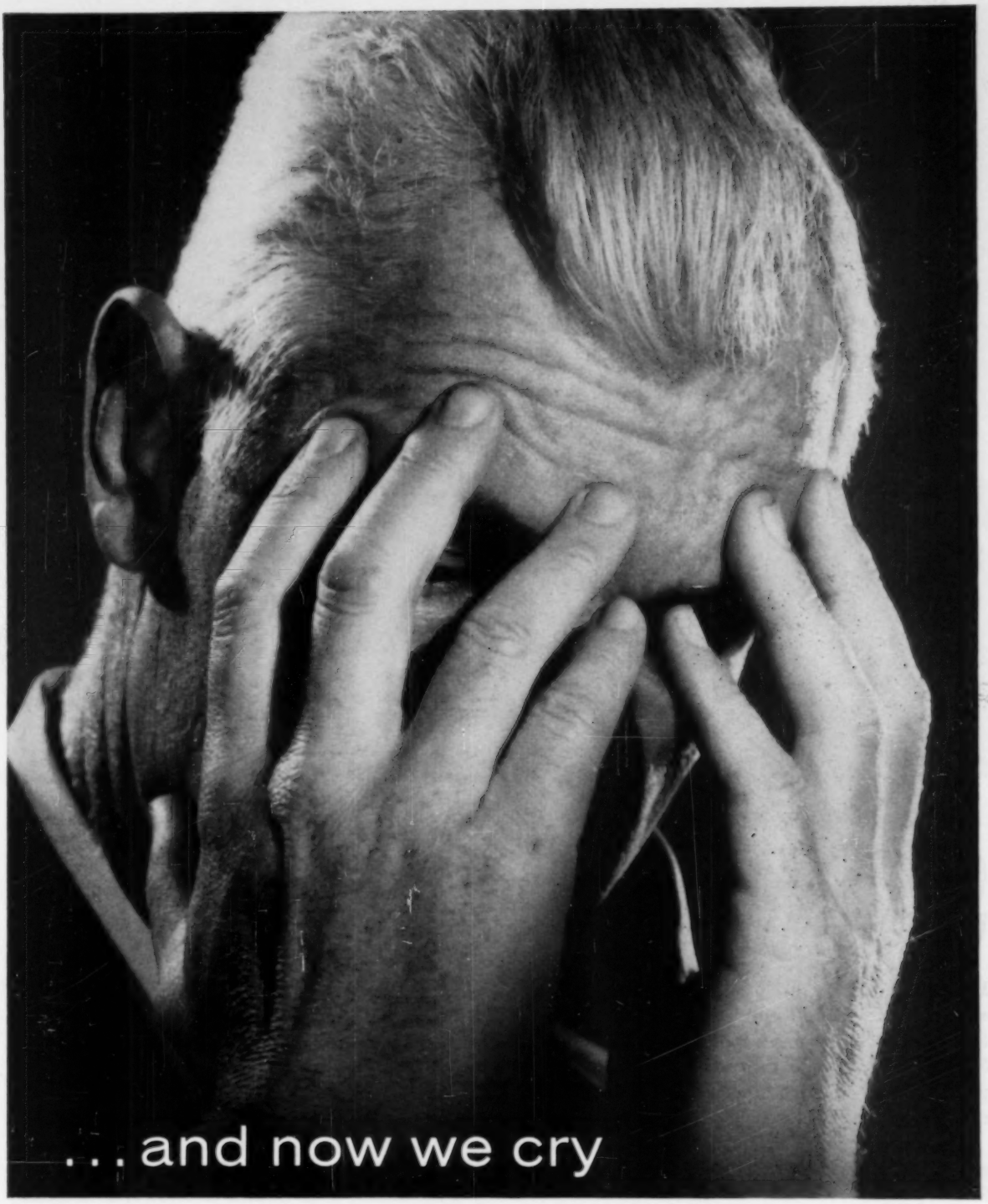
No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Reader's Service Dept.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.



Where were the voices before this tragedy occurred that are raised in crusade chorus now? Who heard the pleas for better fire protection before this deadly reminder? When will we forget the tragedy that now prompts action . . . the reason now we cry?

Gamewell Master Fire Alarm Boxes can prevent many tragedies. This direct-to-Fire-Department system saves time — and on-time equipment and men save lives and property.

The Gamewell Company offers your community *positive* fire protection, backed by the largest plant in the world engaged exclusively in the manufacture of fire alarm systems and emergency signaling equipment. Your community deserves this proven system. Contact the Gamewell office near you. Safety is everybody's business — *our* profession.

Write THE GAMEWELL COMPANY, 1247 Chestnut Street, Newton Upper Falls 64, Mass. A Subsidiary of E. W. Bliss Company.

BLISS Gamewell®

FIRST...WHEN SECONDS COUNT

These Mack Model B-95 1000 GPM triple combination pumpers represent newest acquisitions in Skokie's continuing program of modernization which assures that fire protection will always be equal to the demands of a growing community.

SKOKIE keeps pace by adding Macks

Providing fire fighting facilities to keep pace with a rapidly expanding population is an all-too-familiar problem in towns and cities across the nation. In alert, civic-minded Skokie, Ill., which prides itself on efficient performance of public service, an up-to-the-minute fire department is rightfully a source of community satisfaction.

Reasons for the excellence of Skokie's fire department are not hard to find. An efficient, well-trained professional force of nearly 70 men under the guidance of Chief R. H. Redick . . . a new fire station, so attractive and well designed that it may become a model of its type . . . and a growing list of additions of equipment and apparatus—headed by two new Mack pumpers.

Check leading fire departments anywhere and you'll find Mack apparatus usually rated first. *Custom engineering* is one reason. Mack can deliver the unit that exactly fits your needs; built with Balanced Design—the exclusive Mack practice in which every major component is engineered, manufactured and tested by Mack to work most efficiently with every other component as an integrated unit. *Dependable performance* is the second—and allied—reason. Mack fire apparatus is made to the highest standards in the industry. For sheer dependability, nothing can touch it. For sustained performance, nothing can match it. You can *always* depend on a Mack.

Your nearest Mack branch or distributor will gladly give you full details on the complete line of Mack quality fire apparatus. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

8307

MACK

FIRST NAME FOR

FIRE APPARATUS

COMPLETE LINE OF PUMPERS . . . 500 TO 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65′ TO 146′ . . . COMBINATION LADDER TRUCKS

MONEY SAVING catalogs

Write to address given or circle corresponding number on free post card on page 55.

Convert Sea Water to Fresh Water

790 A new method of converting sea or brackish water to fresh water has been developed by GENERAL ELECTRIC, BURLINGTON, VT. It is called THIN-FILM distillation and is suitable for towns and cities. For details, write the company.

For Snow Plowing Versatility

791 By writing to DEPT. AC1161, FRINK SNO-PLOWS INC., CLAYTON, N. Y., you can obtain complete details on reversible snow plows that plow left, right or straight ahead and have a trip blade that saves wear and tear, even on rough runs.

Standardize and Save!

792 A limited offer from MINNESOTA MINING AND MANUFACTURING CO., DEPT. RBK-111, ST. PAUL, MINN., makes it possible for cities and counties to complete standardization of their STOP signs with "Scotchlite" Reflective Sheeting at reduced costs. For details, write the company.

Fire Ladders

793 Within the 24 pages of *Catalog* No. 589 you'll find the full complement of Duo-Safety fire ladders, as well as a section on Ladder Facts, which talks about construction, maintenance of wood and aluminum ladders, proper ladder positioning, and testing. Write DUO-SAFETY LADDER CORP., 513 W. NINTH AVE., OSHKOSH, WIS.

New On-Off Control for Valves and Pumps

794 A new compact instrument provides automatic on-off sequence control for pumps, valves or other rate-of-flow-controlled equipment. For full details on the "Multi-trol," write MERSEY-SPARLING METER CO., 225 N. TEMPLE BLVD., EL MONTE, CALIF.

End Costly Sewage Treatment Problems

795 Chem-Zyme II corrects digester troubles, eliminates grease problems, eliminates offensive sludge odors, keeps sewage lines and lift stations open, reduces scum, digests and liquifies normal sewage wastes and solids. Write NATIONAL CHEMSEARCH CORP., P. O. BOX 10087, DALLAS 7, TEXAS.

Water Booster System

796 *Bulletin* EF-250-A describes Ever-Flo, a new constant pressure pumping system for supplying domestic water requirements of commercial, industrial and residential buildings. Published by WEIL PUMP CO., 1518A N. FREMONT ST., CHICAGO 22, ILL., it includes construction data, features, etc.

Rubber Pipe Joints

797 These rubber gaskets assure economy, safety and longevity of sewerage and drainage pipe lines. The new Tylox brochure contains engineering data and fully illustrated case histories. For a copy, write HAMILTON KENT MFG. CO., 427 W. GRANT ST., KENT, OHIO.

1962 Police Cars

798 Literature just released by CHEVROLET MOTOR DIVISION, GENERAL MOTORS BLDG., DETROIT 2, MICH., reports that Chevrolets engineered for police work are available as factory-built packages in the 1962 models.

Refuse Collection Body

799 Loading, compaction, control and design features of the Colectomatic Mark II are fully illustrated in this 6-page gatefold folder issued by THE HEIL CO., MILWAUKEE 1, WIS. For copy, request *Bulletin* BH-60106.

Hydrants and Gate Valves

800 R. D. WOOD CO., PUBLIC LEDGER BLDG., INDEPENDENCE SQ., PHILADELPHIA 5, PA., has updated its literature on its line of replaceable barrel, flanged barrel and swivel joint hydrants and gate valves.

Aluminum Lighting Poles

801 The design, engineering, and economy of Monotube aluminum poles, metal highway sign supports, and antenna poles are explained in detail in current literature from THE UNION METAL MFG. CO., CANTON 5, OHIO.

Nonfogging Water Meters

802 Here's a meter with a register that's hermetically sealed against dirt, dust, water and vapor. It earned its name of Easy-Read because it has a readable face. For full story, why not write to BADGER METER CO., 4545 W. BROWN DEER RD., MILWAUKEE 23, WIS.

Compressor/Tractor Package

803 New Series 62 heavy Pneumatractor, introduced by SCHRAMM, INC., 900 E. VIRGINIA AVE., WEST CHESTER, PA., is a multi-use unit comprised of a 125 cfm air compressor capable of mounting a variety of accessories and able to operate pneumatic tools at the same time an accessory is being used.

(See page 61 for more Bulletins)

NORTH CANTON'S NEW SEWERODER HAS RESERVE CAPACITY FOR FUTURE SEWER ANNEXATIONS

Ohio's new city gears up for growth

A. J. Haun, Water & Sewer Supt., watches SeweRodeR in action as John Fleischman, machine operator, handles simplified controls. Board of Public Affairs, which concurred in selection of the SeweRodeR, consists of Carl O. Sponseller, Pres.; George W. Post, L. Earl Waltenbaugh, Members; and Lester L. Broucher, Clerk.

Rapid growth during the past ten years resulted in North Canton, Ohio becoming a City in 1961. Even faster growth is anticipated through annexations, and the City officials have wisely taken this into account by long range planning.

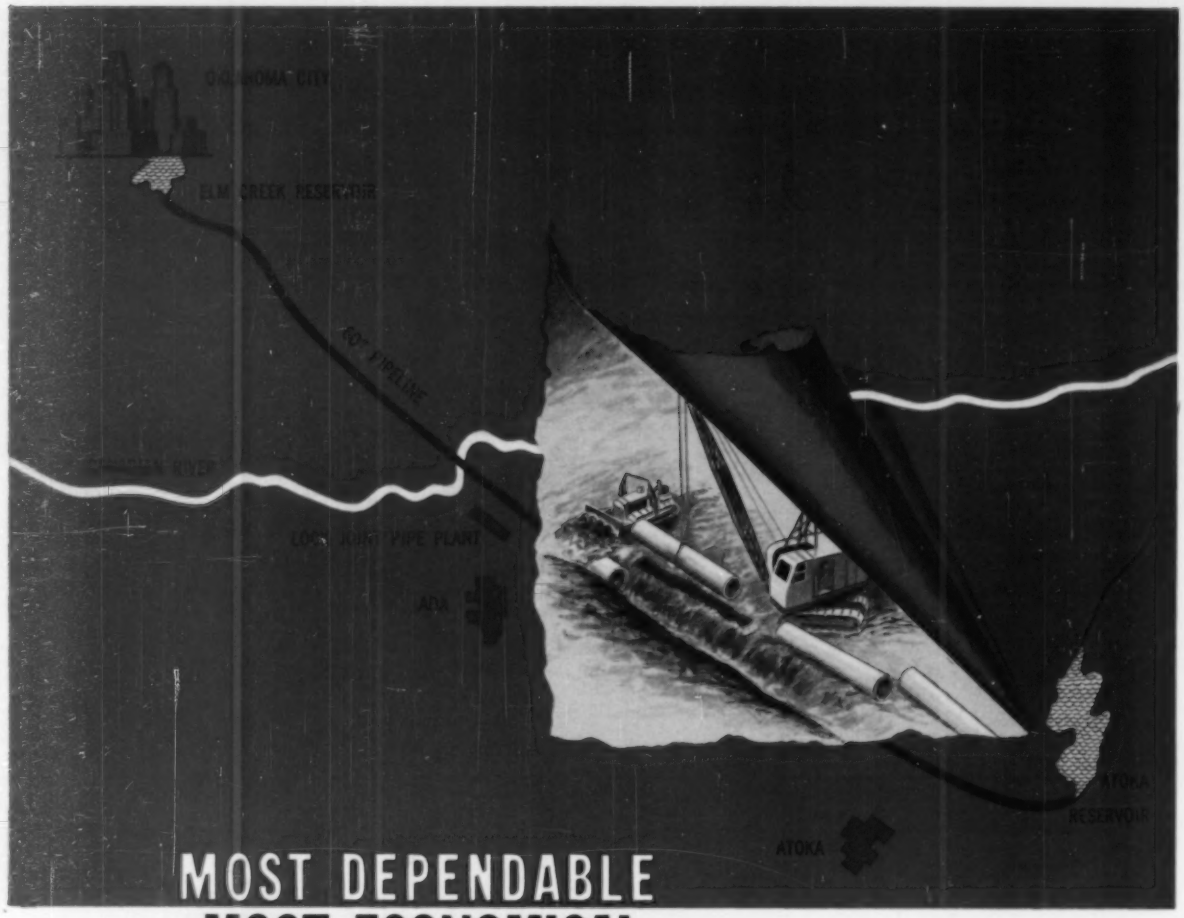
A major problem created by the rapid expansion is the ability to provide adequate sewer cleaning service for today's needs, plus reserve capacity for the future. After careful investigation, Water & Sewer Supt. A. J. Haun found that by purchasing and truck-mounting a SEWERODER, a single rodding crew could easily maintain the entire system on a preventive maintenance basis. He says, "we find the SEWERODER to be the easiest machine to set up and operate that we have ever had."

The SEWERODER's superior performance is made possible by many unique and exclusive features, such as positive non-slip rod drive, automatic safety clutch, instantly reversible push-pull power. All rods are self-contained in the machine and operating controls are conveniently located. Set-ups are made from street surface by merely lowering the hose guide into the manhole by means of a rope.

FLEXIBLE Inc.

415 South Zangs Blvd., Dallas, Texas

3786 Durango Ave., Los Angeles 34, Calif. • 1005 Spencerville Road, Lima, Ohio



MOST DEPENDABLE
MOST ECONOMICAL
FOR THE LONG HAUL!

When a city must go 100 miles for a sufficient supply of potable water, authorities demand a reliable medium for its transmission to the community. That's why Oklahoma City selected LOCK JOINT PRESTRESSED CONCRETE EMBEDDED CYLINDER PIPE to carry its vital supply of pure water from Atoka Reservoir to the state's capital.

The long life, permanent high carrying capacity and negligible maintenance inherent in Lock Joint Concrete Pressure Pipe make it ideal for the construction of this 60" aqueduct –the longest continuous water line ever built in the United States.

Economically, Lock Joint Pipe is also ideal. In addition to long term savings effected in low pumping costs and minimum maintenance, the production of the pipe locally at Ada will plow back more than $6,000,000 into the economy of the area through the use of local labor, services and materials.

LOCK JOINT PIPE CO.

Established 1905

P. O. BOX 269, EAST ORANGE, N. J.

Member of The American Concrete Pipe Association and The American Concrete Pressure Pipe Association

CONCRETE PRESSURE, SEWER, CULVERT & SUBAQUEOUS PIPE: PLASTIC PIPE AND PROTECTIVE COATINGS

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 55.

Tamper-Proof Water Meters

804 Current literature available from ROCKWELL MFG. CO., DEPT. 159L, PITTSBURGH 8, PA., describes the company's Sealed Register "Magnetic" meter, discusses design and engineering features, points out why it costs less to maintain than some other types.

New Snow Plow

805 Model ST-90 plows a 75-inch path. It's the first unit to be specifically designed and balanced for the power and width of large 4-wheel-drive trucks. It is adjustable for angling right or left or bucking straight ahead. Write MEYER PRODUCTS, INC., 18513 EUCLID AVE., CLEVELAND 12, OHIO for details.

Improved Brush Chipper

806 Two new features of the Fitchburg brush chipper give extra protection to crews, contribute to making chipping more efficient and economical. The 20-page booklet, "Chip Dollars," describes these features and many others. Write FITCHBURG ENGINEERING CORP., DEPT. AC-111, FITCHBURG, MASS.

Details Bitumuls Emulsified Asphalt

807 Special advantages of Bitumuls Emulsified Asphalt for surface treatments and penetration pavements are discussed in detail in 24-page *Technical Bulletin* A-1, available from AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

Swimming Pool Equipment

808 In this newly compiled catalog you'll find cleaning equipment, fittings, deck equipment, pumps, multi-port valves, skimmers, underwater lights and other products that make up the line of swimming pool equipment offered by HAYWARD MFG. CO., INC., BROOKLYN 31, N.Y.

Residual Chlorine Analyzer

809 *Catalog* 17B2200 describes a continuous amperometric analyzer for water supplies and sewage effluents. Operation of the Anachlor residual chlorine analyzer is outlined in detail and comprehensive engineering data and specifications are included. Write FISCHER & PORTER CO., 995 JACKSONVILLE RD., WARMINSTER, PA.

Durable All-Purpose Pails

810 Reinforced molded rubber-fiber pails for every municipal purpose are the subject of literature offered by FORTEX INDUSTRIES, INC., 44 WHITEHALL ST., NEW YORK, N. Y. The complete line includes standard sizes up to 10 gallons.

Brush-Cutting, Rolling, Trimming

811 You'll find power tools for all these outdoor maintenance jobs in the new 12-page gatefold illustrated folder now being offered by ROWCO MFG. CO., INC., KEENE, N. H.

Wagon-Mounted Crane

812 BUCYRUS-ERIE CO., SOUTH MILWAUKEE, WIS., developed a self-propelled H-5 wagon-mounted crane, which makes possible unusual crane-excavator mobility and one-man operation. The Wagon is for B-E's H5 Hydrocrane, a 12-ton, ½-yard crane excavator. Literature gives complete information.

New Manual Parking Meter

813 A compact parking meter with 2-way visibility is announced by M. H. RHODES, INC., HARTFORD 6, CONN. It's called the "Mark-Time Sentinal," and greatly increases the distances over which existent meters can be read. Timing mechanism and coin box are sealed. For literature, write the company.

Outdoor Lighting News

814 Basic unit in the new Trianon line, introduced by STERNER INDUSTRIES, WINSTED 1, MINN., is the 6- and 8-lamp CIRCA-lite luminaire, which permits servicing and relamping from ground level. Literature gives details and applications on both Trianon aluminum pole and outdoor fluorescent.

For Small Main and Service Line Works

815 A 77 Trenchliner digs in fast, lowers costs on small-sized trenching assignments, has 32 hi-lo digging selections, cuts 6-inch to 18-inch trench down to 5-foot depths and up to 21 lineal feet per minute. Bulletin gives details; write PARSONS CO., a division of KOEHRING CO., NEWTON, IA.

New Lens for Flashers and Warning Lights

816 A plastic lens for barricade use conserves battery power yet projects maximum illumination on flashing barricades and other hazard warning devices. Specifications and detailed engineering study available from STIMSONITE DIVISION, 3445 N. KIMBALL AVE., CHICAGO 18, ILL.

Water Storage, Filtration Equipment

817 PITTSBURGH-DES MOINES STEEL CO., NEVILLE ISLAND, PITTSBURGH 25, PA., which has long served the waterworks field, is offering literature on elevated steel tanks, standpipes and reservoirs, as well as information on steel structures for water filtration and purifications.

Sand Blast Generator

818 This practical unit will find many municipal uses. It's ideally suited for such outdoor cleaning work as removing scale rust and paint, cleaning bridges, removing laitence from cement. Descriptive bulletin gives details; write RUEMELIN MFG. CO., 3902 N. PALMER ST., MILWAUKEE 12, WIS.

Engines for Municipal Equipment

819 *Bulletin* S-283 describes a rugged line of precision-built engines in the 3- to 60-hp class, points out features and applications, gives specifications. For copy, write WISCONSIN MOTOR CORP., MILWAUKEE 46, WIS.

Fluorescent Area and Street Lights

820 COLONIAL ELECTRIC PRODUCTS, 2901 TONELLE AVE., N. BERGEN, N. J., has issued two bulletins: one covers its Hi-Way Luminaire, a high-output fluorescent street light, the other, its Colonial high-output fluorescent area lights for shopping centers, parking areas, etc.

Snow Removal Literature

821 The FLINK CO., well-known manufacturer of ice control material spreaders and snow plows is offering literature on ice control and seal coating and specifications and catalog on its one-way, reversible, and V-type snow plows. Address requests to 5509 N. VERMILLON ST., STREATOR, ILL.

Improved Sewer Pipe

822 There have been many improvements made over the years in the manufacture of vitrified clay pipe—increased resistance to sulphuric acid, new resilient self-sealing compression joints are but two. For full facts, write NATIONAL CLAY PIPE MFRS., INC., 1028 CONNECTICUT AVE., N. W., WASHINGTON 6, D. C.

Well Strainers

823 When selecting a well strainer you'll want the one that permits the most direct and unobstructed water way from the water bearing formation to the well. COOK WELL STRAINER CO., 6330 GLENWAY AVE., CINCINNATI 11, OHIO, can tell you about strainers that permit maximum well development.

Compact Recording Machine

824 Here's a business recording machine that has 3 speeds, offers 10 hour dictation with remote dictation, has transcription controls. It's the StenOtape 3/10 and can be used for correspondence, meetings, training programs, etc. Write AMERICAN GELOSO ELECTRONICS, INC., DEPT. 312, 251 PARK AVE. S., NEW YORK 10, N. Y.

Fun Unlimited

825 Parks throughout the country are increasing their revenue and at the same time providing an increased measurement of fun for patrons by installing miniature trains, both track and trackless. A catalog from ALLAN HERSCHELL CO., INC., BOX 465, 1165 CLINTON ST., BUFFALO 5, N. Y. will give you full information.

Municipal Workhorse

826 Looking for a machine with power-shovel-like break-out force? One that operates efficiently at the sanitary landfill? A unit that can strip, shape, grade streets? Then you want facts on the "4-in-1." Write DROTT MFG. CORP., MILWAUKEE 15, WIS.

Incinerator Stokers

827 *Bulletin* 1705 describes the Constant-Flo incinerator stoker with its alternate moving stoker bars that contribute heavily to better destruction of refuse, explains features and applications, includes diagrams of operation. Write FLYNN AND EMRICH CO., BALTIMORE 2, MD.

Hydraulic Pipe Cutter

828 This new heavy-duty Super hydraulic pipe cutter will cut 10 inch through 20 inch cast iron water main. Installation and operation is simple; cutting is done with ease, quickly. Literature from WHEELER MFG. CORP. BOX 688, ASHTABULA, OHIO, gives details on this and other models.

Sweeps Clean, Easily

829 When you specify the new Star-sweep Model 1054, you select a rugged power unit with up to 76 inches sweeping swath, 16 cubic foot hopper capacity, 78-square-foot dust filter area. Bulletin gives details. Write WAYNE MFG. CO., 1201 E. LEXINGTON ST., POMONA, CALIF.

Flow Recording Meter

830 *Bulletin* 405 describes a pre-engineered standard capacity recording meter used with 90° and 60° "V" notch weirs. It's specifically built for operation with small or packaged type sewage disposal plants where economy is essential. Write SIMPLEX VALVE & METER CO., 7 E. ORANGE ST., LANCASTER, PA.

(See page 63 for more Bulletins)

"De-icing with straight rock salt is more efficient and more economical than any other ice control method"

Rock salt has unique de-icing properties not combined in any other single de-icing chemical. Unlike abrasives or other ice-control products, straight salt works three ways to get rid of ice and packed snow:

First, it gives positive traction, even before the salt begins to melt the ice.

Next, its corkscrew action penetrates and breaks up ice, right down to road surface. Leaves no slippery layer of surface brine to re-freeze.

Finally, it undercuts the frozen mass, melting the bond between ice and pavement. Traffic action and snow plows easily throw the resulting slush to the side of the road.

Morton Safe-T-Salt* is a screened and graded straight rock salt. Its name was chosen to emphasize the primary reason for street and highway de-icing . . . public safety. Morton Safe-T-Salt gives that safety quickly, cleanly, and economically.

MORTON SAFE-T-SALT WILL:

Provide both immediate traction and quick, effective de-icing.

Spread quickly . . . At the recommended rate of 500 lbs. per mile of 20-ft. pavement, a four ton salt spreader covers 16 miles of highway in one trip.

Spread easily and cleanly. Flows efficiently in mechanical spreaders, leaves no messy residue as sand and cinders will.

Save money on ice control, because it costs less than other de-icing chemicals.

MORTON SAFE-T-SALT WON'T:

Irritate skin, damage animals' paws, rot or shrink leather. It is non-toxic, does not harm rubber or fabrics.

Hurt pavements. Will not damage properly seasoned or air-entrained cement, asphalt or brick paving.

Clog sewers and drains, or leave a rutted, messy pavement.

Leave a slippery layer of surface brine, as do other de-icing chemicals, which melt ice on road surface and quickly dissipate in run-off to road shoulders.

For complete information, call your Morton Salt representative, or write

MORTON SALT COMPANY

INDUSTRIAL DIVISION, Dept. AC-11, 110 N. Wacker Dr. Chicago 6, Ill.

**Safe-T-Salt is a trademark of the Morton Salt Company*

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

New Hydraulic Refuse Packer

831 Here's a body that's available in capacities up to 24 cubic yards, that delivers perfect-balance dumping through wide, easy-opening safety doors. It's the new PACK-KING. For its full story, specifications and advantages, write to M-B CORP., NEW HOLSTEIN, WIS.

Pole-Mounted Waste Receptacles

832 These units are designed to assist municipalities in their continuing battle against the litterbug. They're pole-mounted—parking meter, light pole, street sign post—theftproof and invite use. HOWARD METALCRAFT, EMMAUS, PA., will send descriptive literature on request.

For Better Water Services

833 *Catalog* No. 62 gives full facts on the Ford Linesetter, explains how it can save time and money on water meter installations, immediately and in the long run. For a copy, write THE FORD METER BOX CO., INC., WABASH, IND.

Puts Air to Work

834 Lo-Bro is an air broom that proves its versatility on litter and leaf collecting work, in preparing a hole for blacktop patching, on sidewalk, parking lot and other street cleaning operations. Descriptive bulletin from ATWATER-STRONG CO., ATWATER, OHIO, presents complete information.

Snow Removal Simplified

835 There's a Sno-Flyr to fit your needs and equipment. They make possible fast loading of windrowed snow, knock down high drifts, cast snow from bridges, remove extra-deep snow. For full facts, write BROS INC., ROAD MACHINERY (Sno-Flyr) DIVISION, MINNEAPOLIS 14, MINN.

Rotary Valves

836 A full line of rotary valves for power plant, sewage and water works applications as well as complete valving systems in "packages" that provide remote, telemetered control of valve operation are detailed in literature available from ALLIS-CHALMERS, MILWAUKEE 1, WIS.

Pneumatic Sewage Ejectors

837 These sewage ejector systems with simplex or duplex arrangements and with capacities ranging from 30 to 600 gpm, are available with transistorized, electronic liquid level or mechanical (float) controls. Bulletin No. KSM-2 gives details; write KOMLINE-SANDERSON ENGINEERING CORP., PEAPACK, N. J.

Fallout Shelter Package

838 All components (except ready-mixed concrete) needed to erect a top-rated CD fallout shelter are contained in this prestressed concrete fallout shelter kit—plans, installation brochure, air circulation system, etc. For details, write NATIONAL FALLOUT SHELTERS, INC., LEE HIGHWAY, P. O. BOX 400, FLORENCE, ALA.

Sewage Treatment Chemicals

839 Sewage treatment plant operators will be interested in this bulletin which presents chemicals for the control of odors produced by sewage wastes, for clearing sanitary and waste disposal lines of roots, for foam control in activated sludge plants, and for control of the Psychoda fly. Write BRULIN & COMPANY, INC., 2939 COLUMBIA AVE., INDIANAPOLIS 7, IND.

(See page 67 for more Bulletins)

ASPLUNDH COMPACT

It's here -
It's new -
It's different

Now, for the first time, one vehicle for all three operations — tree trimming — chipping — haul away. Here's the only complete combination offered.

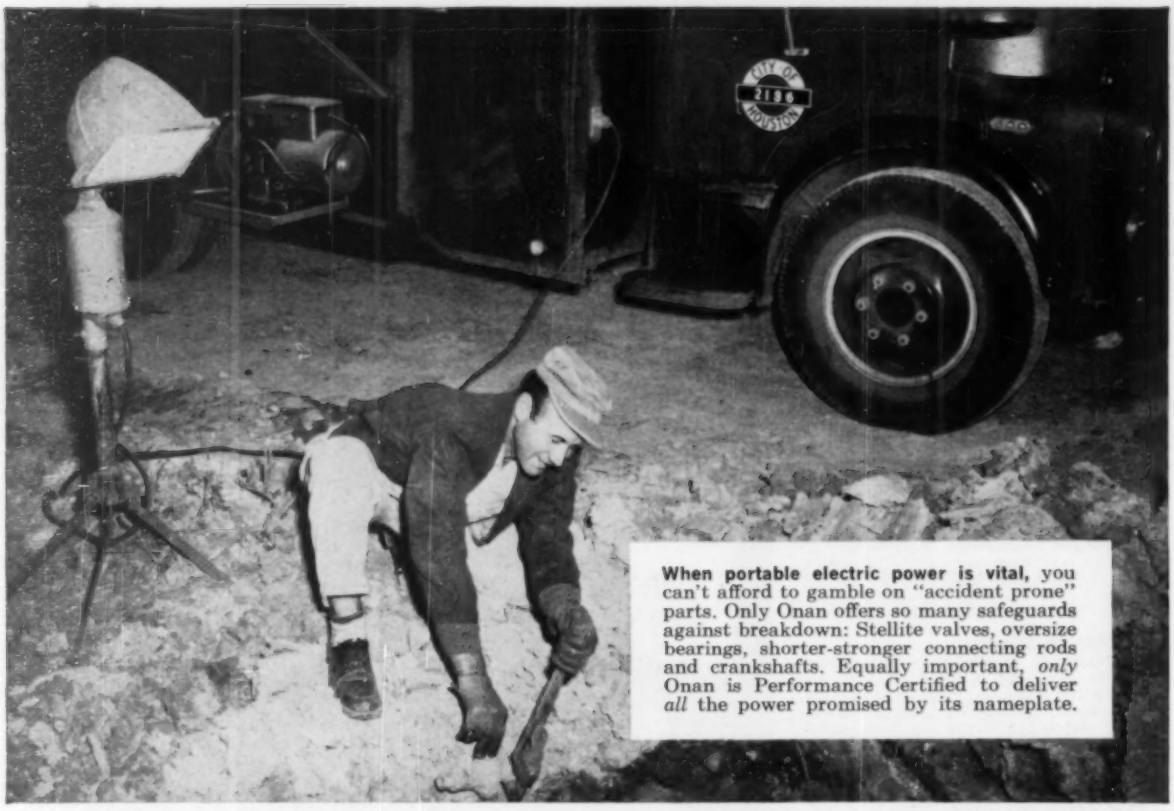
The Asplundh Chipper Company has mounted their famous 12″ chipping unit on a standard chassis with a specially designed forestry dump body, and their "positive safe" 42′ trim-lift. The result . . . a remarkably versatile, mobile unit. Enjoy the ease of trimming with the trim lift; the fast chipping action of the chipper; and the simplicity of the hydraulic dump body. The Asplundh Compact is the answer to modernization in tree work. It reduces disposal time and keeps labor and equipment to an absolute minimum.

Write today for information

Manufacturing Division of Asplundh Tree Expert Company

ASPLUNDH Chipper Company

Hamilton St., Chalfont, Pa.



When portable electric power is vital, you can't afford to gamble on "accident prone" parts. Only Onan offers so many safeguards against breakdown: Stellite valves, oversize bearings, shorter-stronger connecting rods and crankshafts. Equally important, *only* Onan is Performance Certified to deliver *all* the power promised by its nameplate.

Only Onan is certified to give you all the power promised by its nameplate

It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that shortchanges you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.

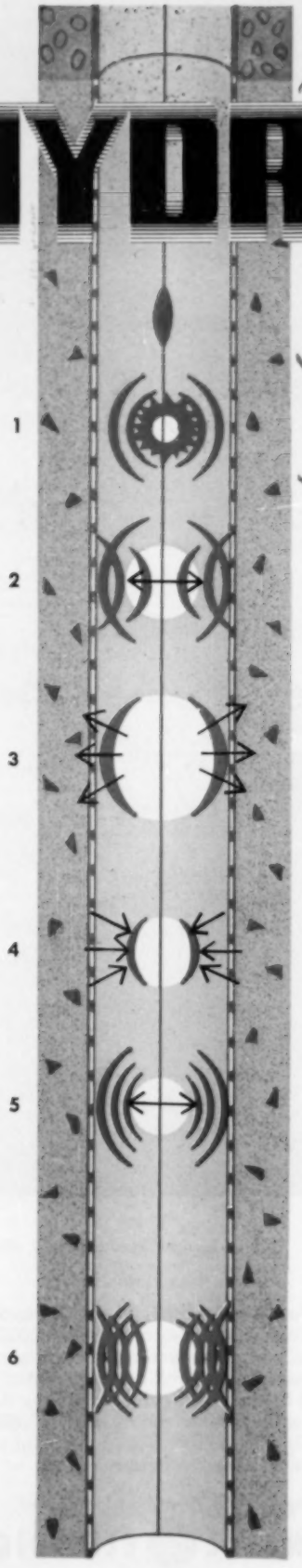
PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory
Onan
Onan

World's Leading Builder of Electric Power Plants

Onan

ONAN Division, Studebaker-Packard Corporation, 2623 University Ave. S. E., Minneapolis 14, Minn.

HYDRO-SONIC



CLEANS WELL SCREENS . . . WITHOUT PULLING THE PUMP

Amazing results are being obtained by water well owners who use Halliburton's exclusive HYDRO-SONIC water well redevelopment process. The HYDRO-SONIC treatment uses the controlled energy of underwater sonic shock waves to vibrate and help rid well screens of plugging materials which keep water from your well. The entire HYDRO-SONIC job may be performed without pulling the pump, if there is sufficient clearance between pump and well casing . . . requiring only a few minutes for what may give a water well many years of new life. Here is how HYDRO-SONIC works: (1) the charge explodes; (2) the shock waves move out; (3) the gas bubble expands; (4) water pressure compresses the bubble; (5) the cycle starts over again; and (6) the shock wave repeats itself several times.

If rejuvenation is what your well needs, contact a Halliburton HYDRO-SONIC man *today!*

HALLIBURTON is also your *most experienced source* of these other water well services:

- CASING PATCH — helps repair casing leaks with plastic patches while casing is in place.
- SQUEEZE CEMENTING — helps shut-off unwanted water.
- ACIDIZING — helps enlarge flow channels in limestone formations.
- HYDRAULIC FRACTURING — fast growing technique of increasing flow channels in sand formations.

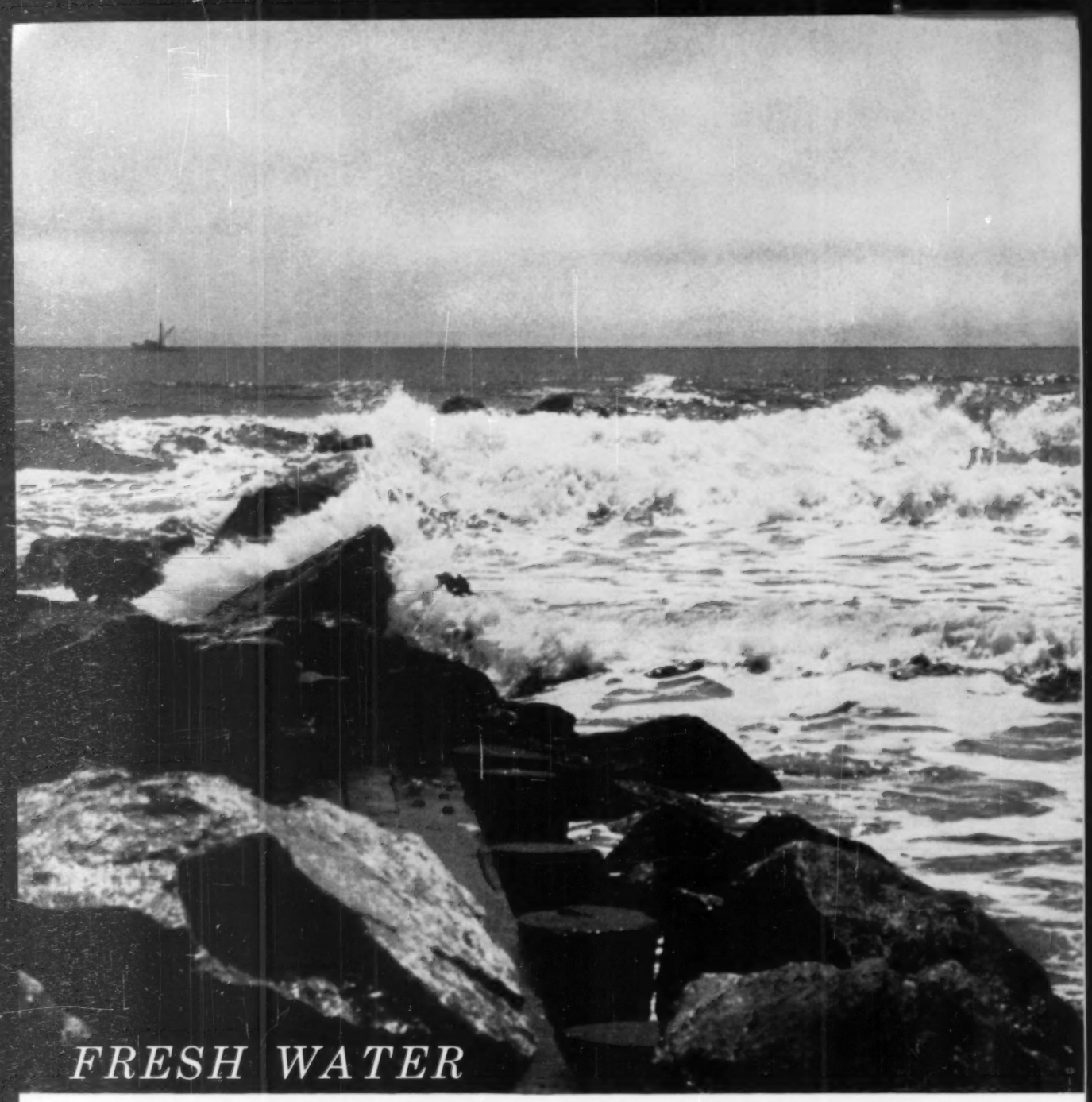
These services are available to you, your drilling contractor, or pump dealer.

Have a Halliburton man discuss your water well problems with you. From the early planning through the completion of your well, his guidance can mean greater yields and longer trouble-free life for your underground water supply.

WATER WELL SERVICES

Dedicated through research and performance to better service for America's water wells

Halliburton
COMPANY . DUNCAN, OKLAHOMA



...A NEW WAY

A new method of converting sea or brackish water—suitable for towns and cities all over America—is now under intensive development at General Electric. Called THIN-FILM distillation, this new G-E process has already achieved over-all heat transfer coefficients at least four times higher than those presently available with commercial equipment. This high heat transfer rate means lower energy costs, a significant factor in achieving economical operating costs.

These conclusions were reached after more than 3000 hours of THIN-FILM tests conducted for the Department of Interior's Office of Saline Water. During these THIN-FILM tests, sea water was converted in seconds from 35,000 parts salt per million parts water to a purity of less than one part salt per million parts water.

General Electric is rapidly expanding its program on saline water conversion, including a THIN-FILM municipal pilot plant. You will be kept informed of our progress. 155-05

Progress Is Our Most Important Product

GENERAL ELECTRIC

BURLINGTON, VERMONT

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

40-Page Parking Lot Manual

840 If you're planning additional municipal off-street parking facilities, and want to avoid pitfalls, errors, and costly mistakes, the manual "How to Lay Out a Parking Lot" will be of great value. Write WESTERN INDUSTRIES, ELECTRIC PARKING EQUIPMENT DIVISION, 2730 W. 36TH PLACE, CHICAGO 22, ILL.

New Buckets for Cat Loaders

841 Nine new general application buckets raise to 15 the number of buckets now offered for the 966, 944 and 922 Caterpillar wheel-type loaders. They make it possible for loader owners to more closely match capacity to the material being handled. Write CATERPILLAR TRACTOR CO., PEORIA, ILL. for details.

Custom-Engineered Fire Apparatus

842 Fire apparatus in the Mack line includes pumpers from 500 to 1250 gpm, squad hose wagons, aerials and combination ladder trucks. All are custom-engineered to fit individual needs and perform dependably. Details available from MACK FIRE APPARATUS, ALLENTOWN, PA.

Snow Plows

843 In current snow plow literature offered by THE GLEDHILL ROAD MACHINERY CO., GALION, OHIO, you'll find V-plows, wings, straight plows, taper plows, and right-V-left plows described along with their applications and controls.

Trench Up to 800 Feet Per Hour

844 The features and merits of the Trench-Hog, which cuts trench 6 inches to 20 inches wide and 3½ feet to 7 feet deep are described in a full-fact brochure prepared by ARPS CORP., DEPT. AC, NEW HOLSTEIN, WIS.

Odor Control Discs

845 A fragrant, laborless, effective way to control odors in urinals, bowls, garbage pails, lockers and closets is described in literature available from THE C. B. DOLGE CO., WESTPORT, CONN., manufacturer of Rounds deodorant discs.

Throwaway Gutter Brooms

846 Worn gutter broom segments can now be replaced in just minutes with the new Uniloy prewired gutter broom that's been designed to take the place of the standard rewirable metal segments. Why not let UNITED ENGINEERING MFG. CO., BOX 248, COVINA, CALIF., tell you about it in detail?

Volute Centrifugal Pumps

847 These versatile units pump large volumes and high heads efficiently, in water works, sewage, etc. They're volute centrifugal, single-stage, single-suction pumps, designed for dry pit, vertical installation. WORTHINGTON CORP., HARRISON PUMP DEPT., HARRISON, N. J., has prepared an 8-page bulletin on Types FA, FC, and NA.

Pumps for Municipal Service

848 Applications, construction features, capacities and heads of a full line of pumps for municipal service are described in catalog literature available from BYRON JACKSON PUMPS, INC., P. O. BOX 2017 TERMINAL ANNEX, LOS ANGELES 54, CALIF. Units include submersibles, deepwell turbines, propeller, double volute multiplex and boiler feed pumps.

Digging, Rehandling Buckets

849 A complete line of orange peel buckets for every municipal digging and rehandling need are presented in this illustrated bulletin, which gives details, weights dimensions, applications. Dwarf and Catch-basin buckets included. Write THE HAYWARD CO., 50 CHURCH ST., DEPT. A, NEW YORK 7, N. Y.

Chip, Chop, Shred

850 The Beaver does the chipping, gobbling brush up to 6 inches in diameter; the Hog does the chopping of garbage and handles other materials reduction operations, and the Air-Fluff paper shredder shreds practically all waste paper in uniform strips for excelsior and easy disposal. For details, write to MITTS & MERRILL, 1022 S. WATER ST., SAGINAW, MICH.

Small Diesel Engines

851 Easy starting, smooth running air-cooled (2-4½ bhp) and water-cooled (2-8 bhp) Yanmar diesels that have big engine features in a compact package are the subjects of new literature offered by CONTINENTAL MACHINERY CORP., 19402 S. SUSANA RD., COMPTON, CALIF.

Fluorescent Safety Paint—Free Sample

852 Technical data, municipal case histories, an illustrated folder of 101 uses for HI-VIZ safety paints, and a new HI-VIZ Municipal Safety Color Kit with free paint sample can be obtained by writing to LAWTER CHEMICALS, INC., DEPT. AC, 3550 TOUHY AVE., CHICAGO 45, ILL. Requests must be made on municipal letterhead.

(See page 69 for more Bulletins)

OMAHA *chose* STEEL PIPE *for* FEEDER MAIN

. . . every length was hydrostatically tested in the shop to AWWA standards!

Maximum length and minimum wall thickness, as only steel pipe provides, enabled the Metropolitan Utilities District of Omaha to install a big pipe line through a quiet residential district with little inconvenience. Only 180 ft. of narrow trench was open at one time to install the coal tar enamel coated 48 in. diameter, ⅜ in. wall thickness steel pipe in. 40 ft. lengths.

Workers of the Metropolitan Utilities District, under the direction of General Superintendent Kenneth Young, are shown lowering a section of pipe into place in the trench just a few feet behind the digger.

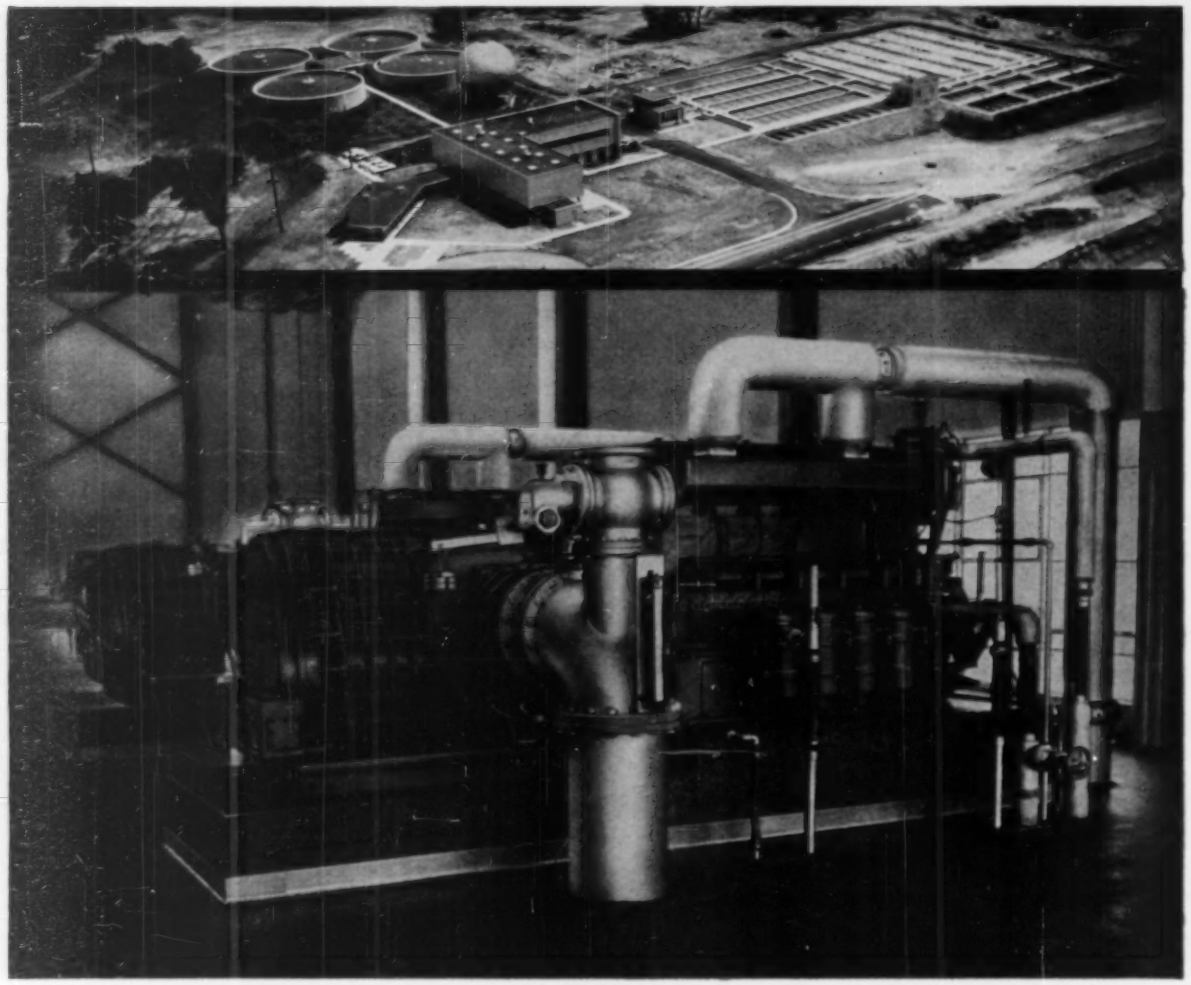
STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

. . . these are inherent qualities of fabricated *steel* pipe. Compare *steel* pipe with other types . . . you'll see why "wherever water flows, steel pipes it best." You can always specify *steel* pipe with confidence.

For your copy of the latest steel pipe brochure, write—

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

STEEL PLATE FABRICATORS ASSOCIATION



WHITE/SUPERIOR ENGINES OPERATE ON FREE SEWAGE GAS

at Hamilton, Ohio's 12,000,000 gallon per day sewage treatment plant

Two White Superior 6G-825 gas engines at Hamilton, Ohio's new activated sludge type sewage treatment plant are saving taxpayers thousands of dollars yearly. Engines operate on free sewage gas produced in the plant digesters. The Superiors, each rated 300 bhp at 690 rpm, drive blowers with a total capacity of 14,000 cfm to aerate sewage. Heat from engine cooling water also helps heat the buildings.

Superiors also feature outstanding design simplicity, with fewer moving parts than comparable power units. Maintenance and repair costs are minimized, and replacement parts are seldom needed, even after extremely long periods of operation.

White Superior covers every municipal power requirement with a complete line of dependable diesel, dual-fuel and gas engines, 190 to 2150 hp, or 150 to 1500 kw. *Write for literature today!* WHITE DIESEL ENGINE DIVISION, Springfield, Ohio.

White DIESEL | Superior ENGINES

White Diesel

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Sweeps Surfaces Clean

853 A new tractor-mounted sweeper, designed for use with the lightest model utility tractor, sweeps a 6-foot path right up to the curb. It uses standard 3-point hookup and is ideal for city streets, parking lots and parks. For complete information, write THE YOUNG CO., 200 MILL ST., WACO, TEXAS.

Rugged Police Cars

854 PLYMOUTH MOTORS reports that there's a 1962 Police Special to meet the various heavy-duty driving needs required by police work and that these Specials deliver up to 7% better gas mileage than '61 models. For details, write the company at 6334 LYNCH RD., DETROIT, MICH.

Prestressed Concrete Tanks

855 This is a new brochure issued by THE PRELOAD CO., INC., 355 LEXINGTON AVE., NEW YORK 17, N.Y. It presents both the immediate and long-term advantages of prestressed concrete storage tanks. Discusses maintenance, service life, construction and over-all costs.

Wheel Loader Likes Tough Jobs

856 Illustrated 8-page *Bulletin* No. 86780-1 describes the new Lorain ML-309 Moto-Loader in terms of range, control and strength. Designed for 9,000 pounds operating capacity, it has a wide range of reach and dump height. Write THE THEW SHOVEL CO., LORAIN, OHIO.

Prestressed Concrete—Applications, Advantages

857 This new 20-page booklet describes 21 different types of structures in which prestressed concrete is frequently used, tells how prestressed concrete is made, outlines applications and advantages. For copy, write PRESTRESSED CONCRETE INSTITUTE, 205 W. WACKER DR., CHICAGO 6, ILL.

Two-Way Mobile Radiotelephone

858 AChieverfone provides a new dimension in mobile communications. It permits telephone calls to be placed or received by radio through the public land line telephone system. Its compact receiver-transmitter utilizes minimum amount of car space, and it's reliable. For details, write AC SPARK PLUG DIV., GENERAL MOTORS CORP., MILWAUKEE 1, WIS.

Takes the Lift Out of Loading

859 This 4-page catalog explains how the Trailevator operates, giving the hauling capacity of a 1-ton pickup at ⅓ the cost. Specifications are included, as well as illustrations showing how the unit lowers to ground level, lifts its own load to hauling position, then hauls. Write MAGLINE INC., TRAILEVATOR DIV., PINCONNING, MICH.

AC Power Generator for Auto Use

860 The new CARon mobile power unit generates 110 volt, 60 cycle AC power from automobile engines to supply power for lighting equipment under both daylight and nighttime conditions, recorders, motion picture cameras. For details, write GORDON ENTERPRISES, 5362 N. CAHUENGA BLVD., N. HOLLYWOOD, CALIF.

Improved Boring Machine

861 Model 70 bores with no surface break, up to 250 feet in length, up to 6 inches diameter. It operates for 1,000 feet on just 1 gallon of gas and reams up to 12 inches diameter. EARTHWORM BORING MACHINE, INC., P. O. BOX 1100, SANTA MONICA, CALIF., has prepared detailed literature on this improved product.

Blast Clean Water Meters

862 Now you can remove dirt, discoloration, scale, paint, from crevices and internal parts of water meters without scratching, scoring or changing precision tolerances—and it can be done in just 5 minutes. For details on the Liquid Honing method, write VAPOR BLAST MFG. CO., 3037 W. ATKINSON AVE., MILWAUKEE 9, WIS.

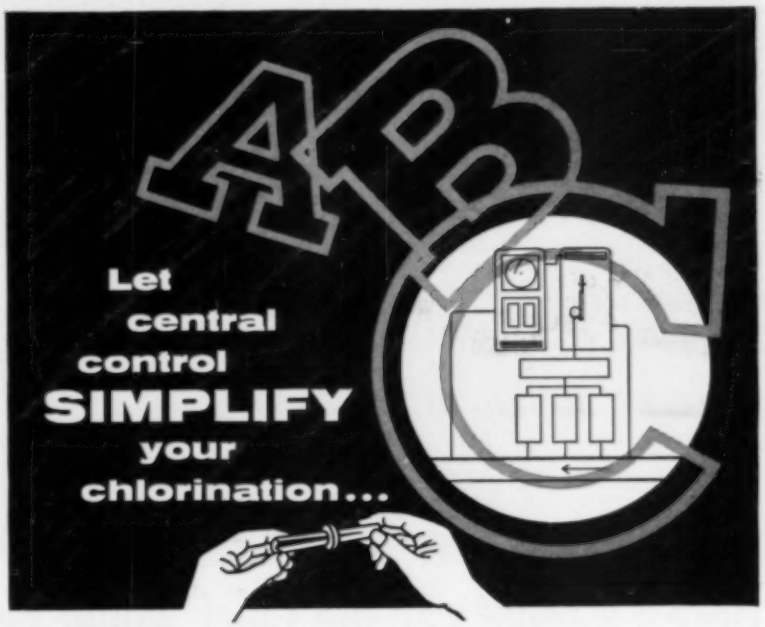
Self-Propelled Loader

863 This compact, economical, highly maneuverable unit is designed to handle a variety of materials handling jobs quickly and easily. Its construction features, work output, operating costs and applications are given in 4-page booklet, available from MELROE MFG. CO., 4700 W. 78TH ST., MINNEAPOLIS, MINN.

Parking Meters and Public Relations

864 . . . can easily go hand in hand, especially when coin changers are conveniently located near parking meter facilities. STANDARD CHANGE-MAKERS, INC., 422 E. NEW YORK ST., INDIANAPOLIS 2, IND., will gladly provide full information and explain how these units speed use of meters and increase revenue.

(See page 71 for more Bulletins)



W&T COMPOUND-LOOP CONTROL

By residual analysis and information feedback, Wallace & Tiernan Compound-loop Control adjusts chlorinator feed rates to changing water flows and chlorine demands. You can add W&T Remote Residual Recording and Controlling Components throughout your water system and centralize control at any desired location. You select the desired residual on a central panel and the Compound-loop System maintains that residual faithfully.

Remote recording by W&T gives you duplicate residual records and minute-to-minute information where it helps guide operation. Remote controlling by W&T lets you adjust a chlorinator miles away. And W&T Remote Components adapt to almost any system, any type of control.

With remote residual recording and controlling by Wallace & Tiernan you centralize control... save time and operating expense... extend the advantages of the Compound-loop method.

For more information, write Dept. S-142.00

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

Here's a scout car the Chief would be proud to prowl in!

If the chief wants to ride in style there's nothing like a '62 Plymouth with Forward Flair Design. And if he's in a hurry, Plymouth's powerful Golden Commando V-8 engine (standard equipment on the Pursuit Special) won't spare the horses! There are 305 of them in this action-packed power plant.

The '62 Plymouth Police Specials are designed especially for the heavy-duty driving that Police work requires. Whether the job calls for quick acceleration and high-speed chases on superhighways or desert roads; the handling ease and maneuverability needed for suburban patrolling over hills and around curves; or the slow, stop-and-go driving of city traffic; Plymouth has a Police Special to suit your needs. With all their power and high-performance qualities, Plymouth Police Specials are economical to operate and maintain. Self-adjusting brakes. Battery-saving alternator. 32,000-mile lubrication on major chassis points. Oil changes half as often this year as last. Up to 7% more gas mileage than the '61 Plymouth. (And remember, a Plymouth "6" scored higher than any other full-size car in the 1961 Mobilgas Economy Run.) So if the chief likes a low-price car with high style and high performance, tell him to—LOOK AT PLYMOUTH . . . NOW!

'62 Plymouth Puts Economy First

Up to 7% better gas mileage than last year · New full-unit construction for long life and low maintenance · 13-step dip-and-soak process for lasting body protection · New 32,000-mile lubrication cycle on major chassis points · Self-adjusting brakes · New half-as-often oil change system

THE NEW PLYMOUTH

Quality-engineered by Chrysler Corporation

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Improved Parking Meter

865 Complete information and specifications on the new Model K parking meter, which incorporates many improvements and refinements of benefit to both user and municipality, are offered by MAGEE-HALE PARK-O-METER CO., P. O. BOX 7298, OKLAHOMA CITY, OKLA.

Just Right for Sewage Plant Service

866 When selecting chain for sewage treatment plant service, you want the kind that's built for rugged service, long wear, low maintenance. Long pitch pintle chain is that type. For details, write to MOLINE MALLEABLE IRON CO., ST. CHARLES, ILL.

Measures Distance at a Walk

867 Here's a measuring wheel that records up to 100,000 feet automatically, keeping accumulated total always in view. It's calibrated in inches and fractions as well as in tenths for engineers. Just one in a complete line, it's described in literature available from ROLATAPE, INC., 1741 14TH ST., SANTA MONICA 2, CALIF.

Submersible Pump Catalogs

868 *Bulletin* No. 202 supplies facts on submersible pumps available for wells as small as 6 inches and in capacities from 30 gpm up. *Bulletin* No. 203 explains how In-Line submersibles provide the answer to many problems in booster pump applications. Both available from LAYNE & BOWLER, INC., MEMPHIS 8, TENN.

Push-Button Fire Fighting Pumps

869 Horizontally split CM Electro-Matic use electric automotive motors to power fire pump controls, and there's a pump to fit any engine or drive. Literature describes the pumps and controls, including transfer valve, relief valve, priming, etc. Write WATEROUS CO., 80 E. FILLMORE, DEPT. 3F17, ST. PAUL 7, MINN.

Thermal Snow Melting System

870 *Bulletin* 118 presents stationary, semi-mobile, and mobile snow melting units, describes the Thermal Snow Melting System in terms of operation, speed and economy, explains how to figure your needs. Write THERMAL RESEARCH & ENGINEERING CORP., CONSHOHOCKEN, PA.

To Spot a Speeding Vehicle

871 Speedalyzer *Bulletin* J-7 supplies the facts on a method that accurately checks the speeding scofflaw and at the same time doubles a policeman's law enforcement capacity. For copy, write STEPHENSON CORP., RED BANK, N. J. Also ask about the Breathalyzer and Minutemen Resuscitator.

2-Way Radio

872 These Messenger 2-way radio units are ideal for police, fire and rescue units, maintenance and park crews. They're available in hand-held, base station and mobile units. For full facts, write E. F. JOHNSON CO., 1905 10 AVE., S.W., WASECA, MINN.

Shade Tree Sprayer

873 *Form* No. 3-500 gives full description of the Model L-80A Aero Mist, a high velocity, medium volume mist sprayer, designed to provide economical pest control in shade trees. Specifications included. Write HARDIE MFG. CO., INC., 730 S. MAIN ST., WILKES-BARRE, PA.

(See page 81 for more Bulletins)

KENNEDY

Swing Check Valves are Built to *Last Longer*, provide leak-proof seal

Iron-Body, Bronze Mounted with Bronze Faced Disc or Rubber Disc

Sizes: 4" through 12"

Working Pressures: Cold Water 200 lbs.

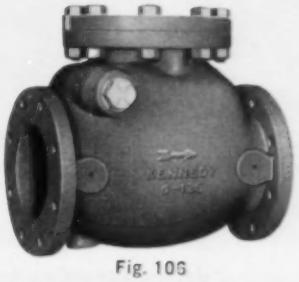


Fig. 106

These valves prevent backflow and provide a leak-proof seal with rubber disc. They may be installed in horizontal or vertical position with upward flow.

When more positive control of the disc is needed, valves may be supplied with either a lever and spring or a lever and weight. Either can be adjusted to exert the required pressure on the disc when the valve is in operation.

• *Write today for complete details.*

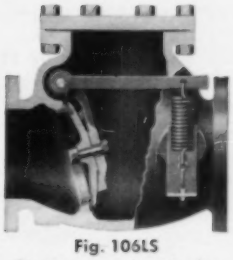


Fig. 106LS
Cutaway view showing disc with external view of lever and location of spring.

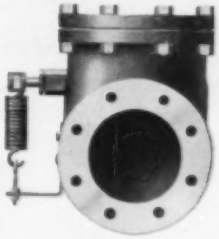


Fig. 106LS
Exterior view showing spring and method of mounting on the valve body.

NOW Available . .

The new KENNEDY A.W.W.A. Maintenance Manual . . . giving detailed information. For your copy write today on your letterhead.

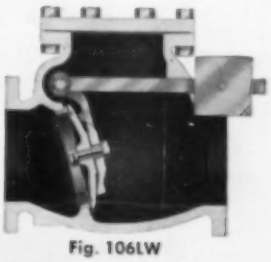
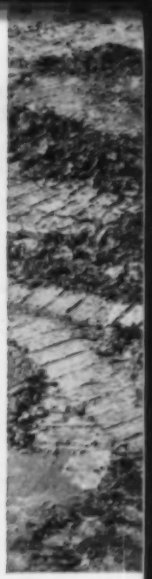


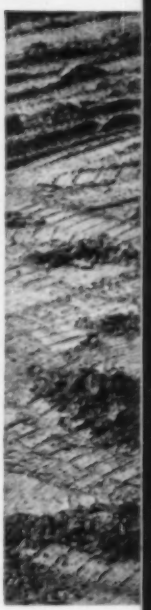
Fig. 106LW
Interior view of disc showing attachment of lever with exterior view of weight.

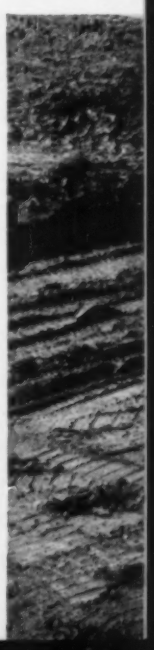
KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS
• OFFICES AND WAREHOUSES IN NEW YORK, CHICAGO, SEATTLE, SAN FRANCISCO, ATLANTA • SALES REPRESENTATIVES IN PRINCIPAL CITIES •

NOW...ALLIS-CHALMERS BRINGS YOU

NEW HD 7G FULL POWER STEERING BRAKING SHIFTING







A new combination of full power control—hydraulic steering, braking, and shifting—brings new output capacity and ease of operation to Allis-Chalmers 1¾-yard HD-7G. With a 100-hp turbocharged engine and torque converter drive, there's plenty of smooth, production-boosting power in this outstanding tractor shovel.

Easy! Power steering and power brakes—not only new ease of operation . . . but reduced maintenance and unusually long-life service as well! The reason—steering clutches and brakes run in a complete oil bath. Runs cool, with minimum brake adjustment, no steering clutch adjustment necessary at all!

Economical! Allis-Chalmers *7000* Turbocharged engine—delivers 100 net hp from a combustion system that has established itself as the most efficient in the industry. Controlled turbulence and open chamber combustion design provide a thorough mixing of air and fuel for fast, even, complete combustion . . . matchless fuel economy.

Fast work cycles with Power-Shift—The 7G combines smooth torque converter performance with single-lever Power-Shift transmission. You *shift on-the-go*—from any forward speed to any reverse speed, with an infinite number of speeds through the entire working range of up to 5.9 mph forward, up to 4.2 mph reverse.

Stable! Most track in its class—With 7-ft, 1⅝ in. of track on the ground, 62-in. tread, and 15-in. track shoes, the HD-7G has the extra stability to handle heaped loads with speed and safety . . . whatever the job, whatever the terrain.

Smooth! Exclusive Ground-Speed-Control—No need to limit your speed by shifting into lower gears. Set your speed automatically with Ground-Speed-Control. If you want the tractor to run at 2 mph, it moves at that speed with or without load, up to full engine power. There is no speed-up when the load is lightened, no slowdown when it is increased. You get smooth operation throughout the work cycle . . . top production all day long.

STEP UP YOUR

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

Your Allis-Chalmers dealer will be glad to arrange a full-scale demonstration on your job at your convenience. *Allis-Chalmers Construction Machinery Division, Milwaukee 1, Wisconsin.*

WITH **ALLIS-CHALMERS**

POWER FOR A GROWING WORLD

100 HP
1 3/4 YD

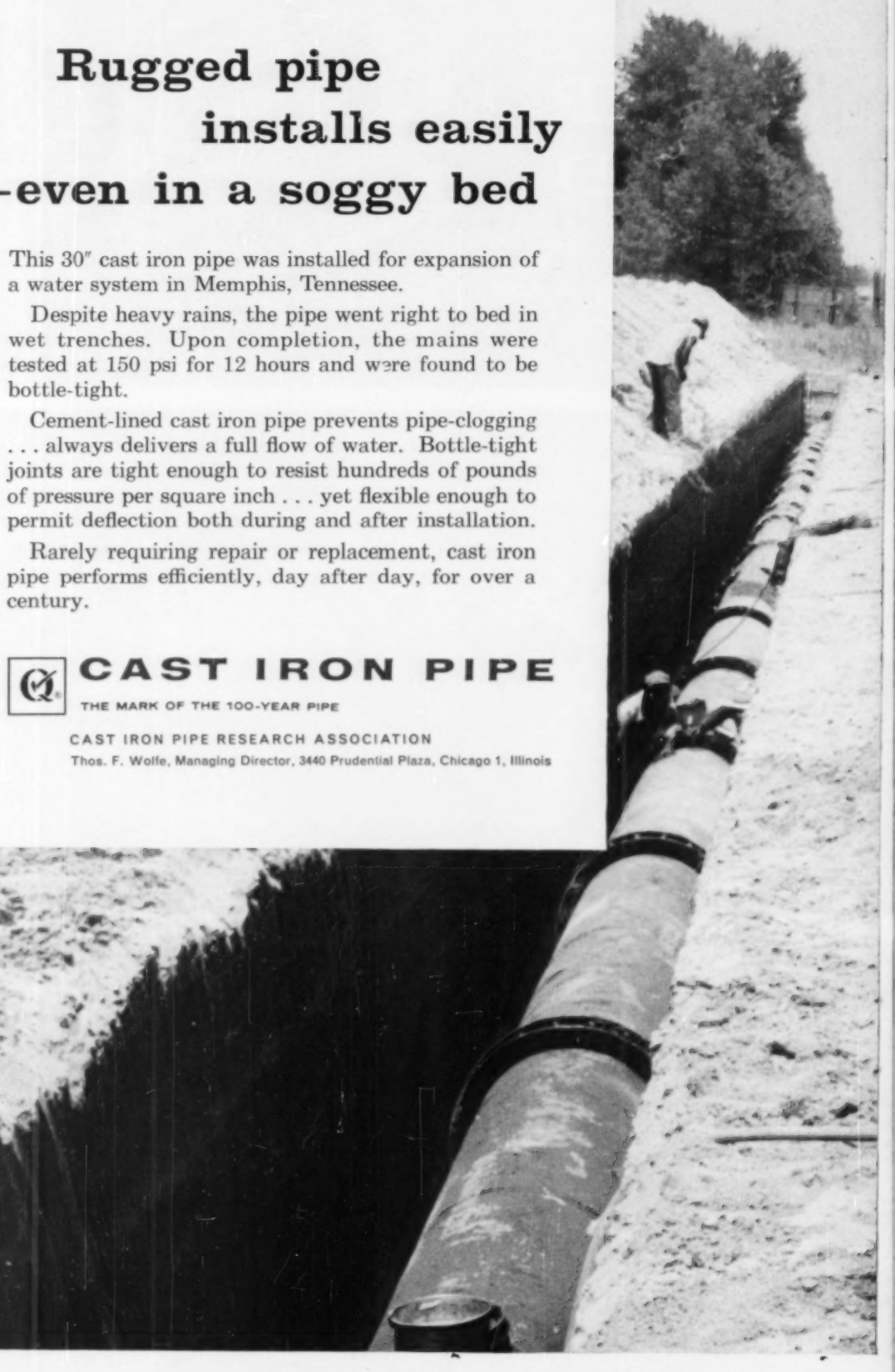
Rugged pipe installs easily –even in a soggy bed

This 30″ cast iron pipe was installed for expansion of a water system in Memphis, Tennessee.

Despite heavy rains, the pipe went right to bed in wet trenches. Upon completion, the mains were tested at 150 psi for 12 hours and were found to be bottle-tight.

Cement-lined cast iron pipe prevents pipe-clogging . . . always delivers a full flow of water. Bottle-tight joints are tight enough to resist hundreds of pounds of pressure per square inch . . . yet flexible enough to permit deflection both during and after installation.

Rarely requiring repair or replacement, cast iron pipe performs efficiently, day after day, for over a century.

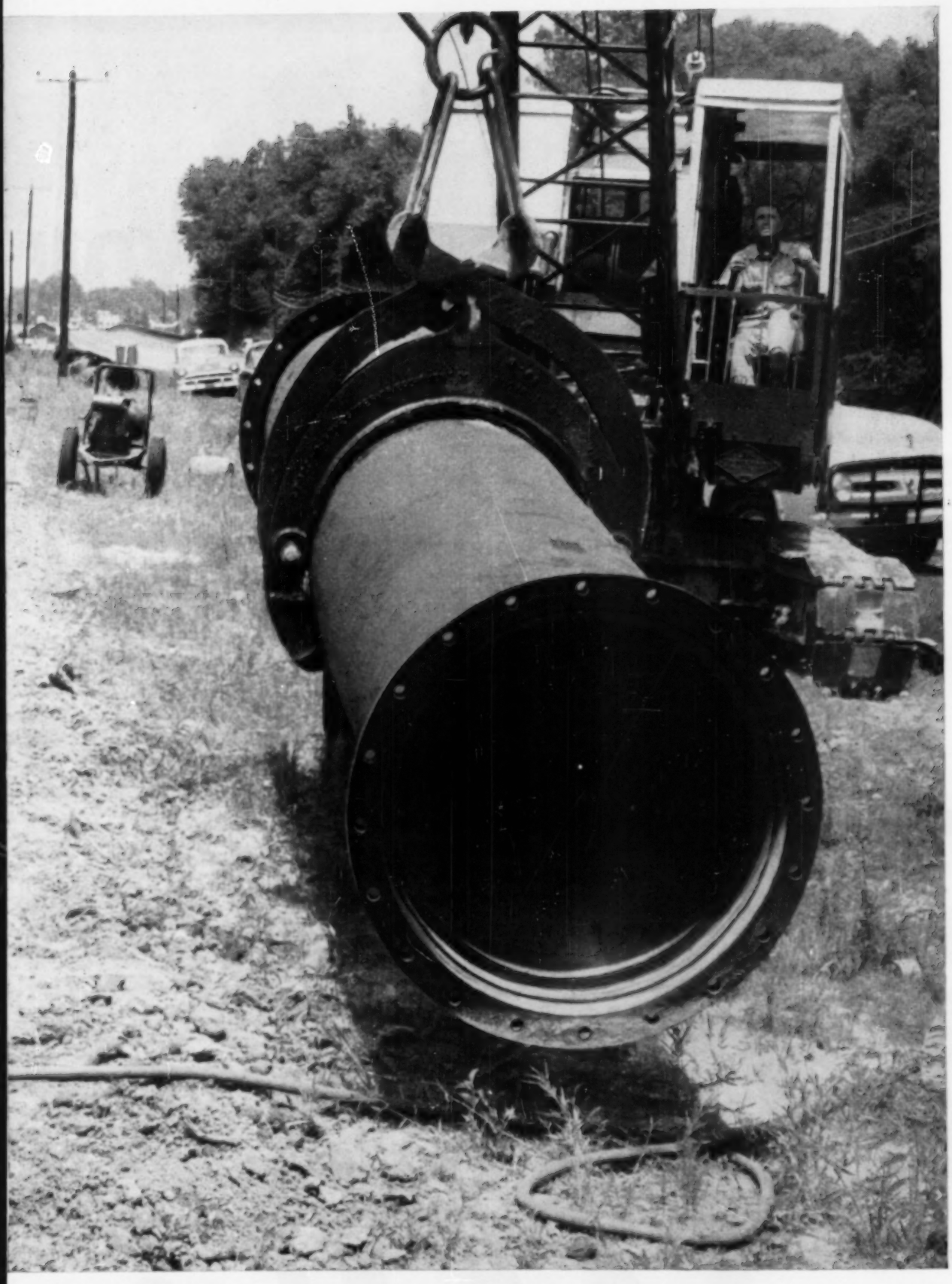


CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

CAST IRON PIPE RESEARCH ASSOCIATION

Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois



WHY IT WILL PAY YOU TO REMOVE ALL [redacted] YELLOW STOP SIGNS BEFORE JANUARY 31

To all cities and counties that desire to bring their Stop signs completely up to standard, we make this special offer:

Now is the time to clear up the confusion. Complete the change to the one and only standard, red (or the new standard Yield sign where warranted) with sign faces of "Scotchlite" Reflective Sheeting. You get the finest full-time, all-weather signing you've ever seen. You save money from the start!

For a limited time, we are offering special packages of prescreened Stop and Yield sign faces at reduced prices.

But that's not all. The purchase of a package entitles you to still another price reduction—this time on the "Scotchlite" Applicator Machine of your choice. One of these machines is your key to making and maintaining the highest quality reflective signs at the lowest cost. Your old sign blanks can be used over and over, saving tax dollars for years to come.

So, don't stop short. It really pays to complete your standardization now with "Scotchlite" Reflective Sheeting. Mail the coupon for full details. This offer is limited to cities and counties in the United States, and expires January 31, 1962.

Scotchlite®
BRAND
REFLECTIVE SHEETING

Minnesota Mining and Manufacturing Co.,
Dept. RBK-111, St. Paul 6, Minn.
I want to know all about your STANDARDIZE AND SAVE offer. Without obligation, please have your representative call.

Name _____

Title _____

Address _____

City _____ **State** _____

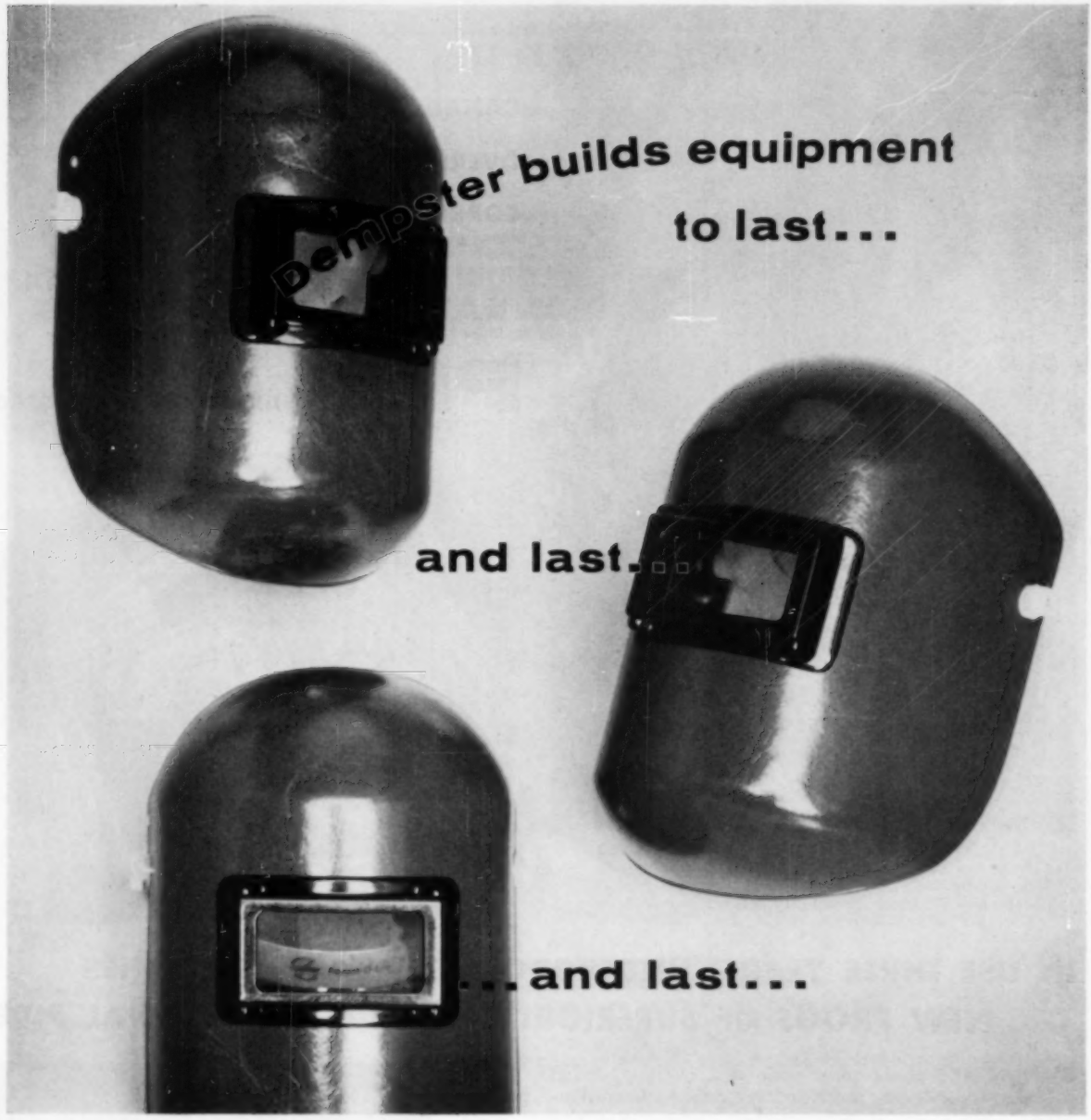
Reflective Products Division 3M

Long haul? Short haul? Unusual situations? These problems are the day to day concern of our large and competent engineering staff. Twenty-seven years of continuing research, development and design of systems that save money for those concerned with storage and collection of refuse, has resulted in the largest line of this type equipment in the world.

DEMPSTER BROTHERS
Inc.
KNOXVILLE 17, TENNESSEE

THE DEMPSTER DUMPSTER® SYSTEMS

Write Dept. AC-11 for your copy of Catalog Brief 160

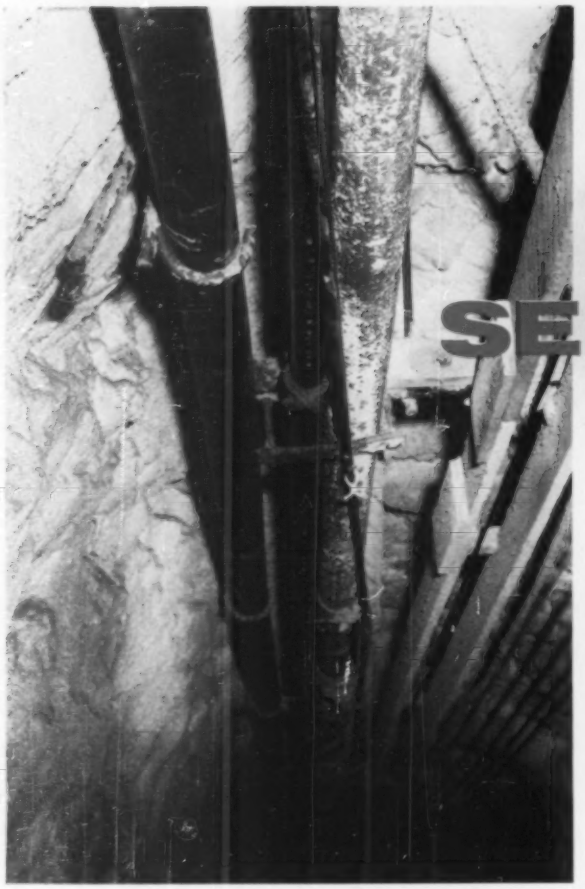


How long will it last? This is the question every city official must ask when he buys equipment, because *true* annual cost consists of initial price, plus total maintenance and operational costs, divided by the number of years it retains its efficiency. Many cost-conscious officials know that many pieces of our equipment are still efficient after 25 years of service.

DEMPSTER BROTHERS
Inc.
KNOXVILLE 17, TENNESSEE

Write Dept. AC-11 for your copy of Catalog Brief 160

THE DEMPSTER DUMPSTER® SYSTEMS



CANADIAN GOLD MINES
OVERCOME CHEMICAL
CORROSION WITH

SEMI-RIGID PIPE made of ABS Plastic

At the 3,875 foot level, a 4-inch line of plastic pipe is used to bring corrosive flow water out of the narrow tunnelway. Note corroding metal pipe at right. Pipe is extruded by Micro Plastics of Acton, and sold as Carlon Pipe by Beardmore & Co., Ltd., Toronto.

IN USE THREE YEARS, UNDERGROUND SYSTEM FURNISHES NEW PROOF OF SUPERIORITY OVER CONVENTIONAL PIPE

Semi-rigid ABS plastic pipe, made of CYCOLAC brand polymers, is performing a critical job for the McIntyre Porcupine Gold Mines at Schummacher, Ontario. Reaching thousands of feet beneath the earth, two ABS pipe systems carry fresh air and water to workmen. A third line drains off flow-water and seepage so corrosive that it utterly destroys conventional pipe in months. But ABS pipe of CYCOLAC brand polymers met the challenge. ABS lines, in use for over three years by McIntyre, are capable of withstanding these highly corrosive conditions indefinitely. Easier installation and faster service, since the lines are moved frequently, help to prove again and again the superiority of pipe made with CYCOLAC brand polymers.

The full story of the unique properties of ABS pipe is told in a remarkable twenty minute motion picture film. For an exclusive showing, write Dept. A-11.

BE *ABSolutely* SURE . . .
INSIST ON SEMI-RIGID ABS PIPE
made of
CYCOLAC®
BRAND POLYMERS
THE BORG-WARNER PLASTIC THAT IS
TOUGH, HARD AND CORROSION-RESISTANT

MARBON CHEMICAL WASHINGTON — MARBON B-W CHEMICAL — DIVISION **BORG-WARNER** WEST VIRGINA

*CYCOLAC is the registered trademark of Borg-Warner

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

100-Watt VHF Mobile Radio

874 This power package is designed to permit greater range from car to car, from car to base station, to give full saturation coverage of entire area. Battery drain is low. For full facts and important features on Slimline, write AERONAUTICAL ELECTRONICS, INC., BOX 6527, RALEIGH, N. C.

Traffic Counters

873 These Trafficounters record vehicle volume quickly, accurately, dependably, on city streets, boulevards, super highways and county roads. They're available in two models, one for 15-minute counts, the other for hourly counts. For descriptive bulletin, write STREETER-AMET CO., GRAYSLAKE, ILL.

Radar Speed Timer

876 A 6-page bulletin illustrates and gives full description of this electronic velocity analyzer which is one-man operated, fully transistorized, and has low battery drain. Specifications, features, housing, etc. included. Write C. H. STOELTING CO., 425 N. HOMAN AVE., CHICAGO 24, ILL.

Hydraulic Earth Boring Unit

877 Here's a compact, lightweight, dependable unit that saves time and money on earth boring jobs. Soil conditions determine speed and production. *Bulletin* 818 gives specifications, applications, full description. Write FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINN.

Safe Winter Play

878 An all steel sled and tobaggan slide that should provide safe fun for youngsters and oldsters lends itself to installation and use at playgrounds, schoolgrounds, in parks, handles 10 sledders per minute. For bulletin, write STANDARD STEEL PRODUCTS MFG. CO., 2836 S. 16TH ST., MILWAUKEE 15, WIS.

Safe Pipe Handling

879 This new field-tested Chinbro Pipe Grab makes possible quick and safe handling of steel and cast iron pipe in 6, 8, 10 or 12-inch diameters. It has non-slip grip, attaches instantly, surely. For descriptive literature, write CIANBRO MFG. CORP., BOX D, PITTSFIELD, MAINE.

Underground Pipe Inspection

880 Applications, features, equipment, specifications and accessories of a pipe inspection system that utilizes closed circuit TV to locate leaks and trouble spots in water and sewer lines are given in catalog sheet, available from INSPECTOLINE, INC., 9501 EUCLID AVE., CLEVELAND 6, OHIO.

Automotive Equipment

881 The Eaton line of thermostats, radiator pressure caps, gasoline tank caps, locking gas caps and oil filler caps are the subject of a 17-page catalog which includes application charts. For copy, write EATON MFG. CO., STAMPING DIV., 17877 ST. CLAIR AVE., CLEVELAND 10, OHIO.

Remote Meter Reading System

882 It is now possible for water meter readers to make more readings per day more easily, accurately, and eliminate call backs. The new Teleread method of water meter reading makes this possible. For details, write BUFFALO METER CO., 2902 MAIN ST., BUFFALO 14, N. Y.

Automatic Data Logging

883 *Bulletin* D401 describes Data-Master, economical digital data loggers for automatically collecting and presenting measured data in suitable form for operating, test, process analysis and accounting purposes. Typical applications included. Write THE BRISTOL CO., WATERBURY 20, CONN.

Melt Snow Away

884 Heavy snows can now be removed from streets, parking areas, airports easily and quickly. Peabody snow melters utilizing direct-contact closed-circuit hot water generators make it possible. For details, write PEABODY ENGINEERING CORP., 232 MADISON AVE., NEW YORK 16, N. Y.

Fire Protection

885 Direct-to-fire-department connected alarm and emergency signaling system can prevent tragedies, save property and costly financial burdens. THE GAMEWELL CO., 1247 CHESTNUT ST., NEWTON UPPER FALLS 64, MASS., will be glad to provide your community with information and details on proven fire protection signaling systems.

Refuse Handling Equipment

886 Concerned with refuse handling and storage? Want facts and information on a system that's efficient and economical? One that meets the demands of long or short hauls, can adapt to unusual situations? Then request *Catalog Brief* 160; write DEMPSTER BROTHERS INC., DEPT. AC-11, KNOXVILLE 17, TENN.

YOUR CITY-ZENS

Appreciate Professional Services

You can earn their praises for work well done, courteously, efficiently and—with full responsibility taken off your shoulders—by employing

DAVEY TREE EXPERT CO.

for tree spraying and general tree care,
tree pruning and line clearance,
weed and brush control,
tree removal and tree transplanting.

Write direct to F. F. Lofgren, Sales Manager

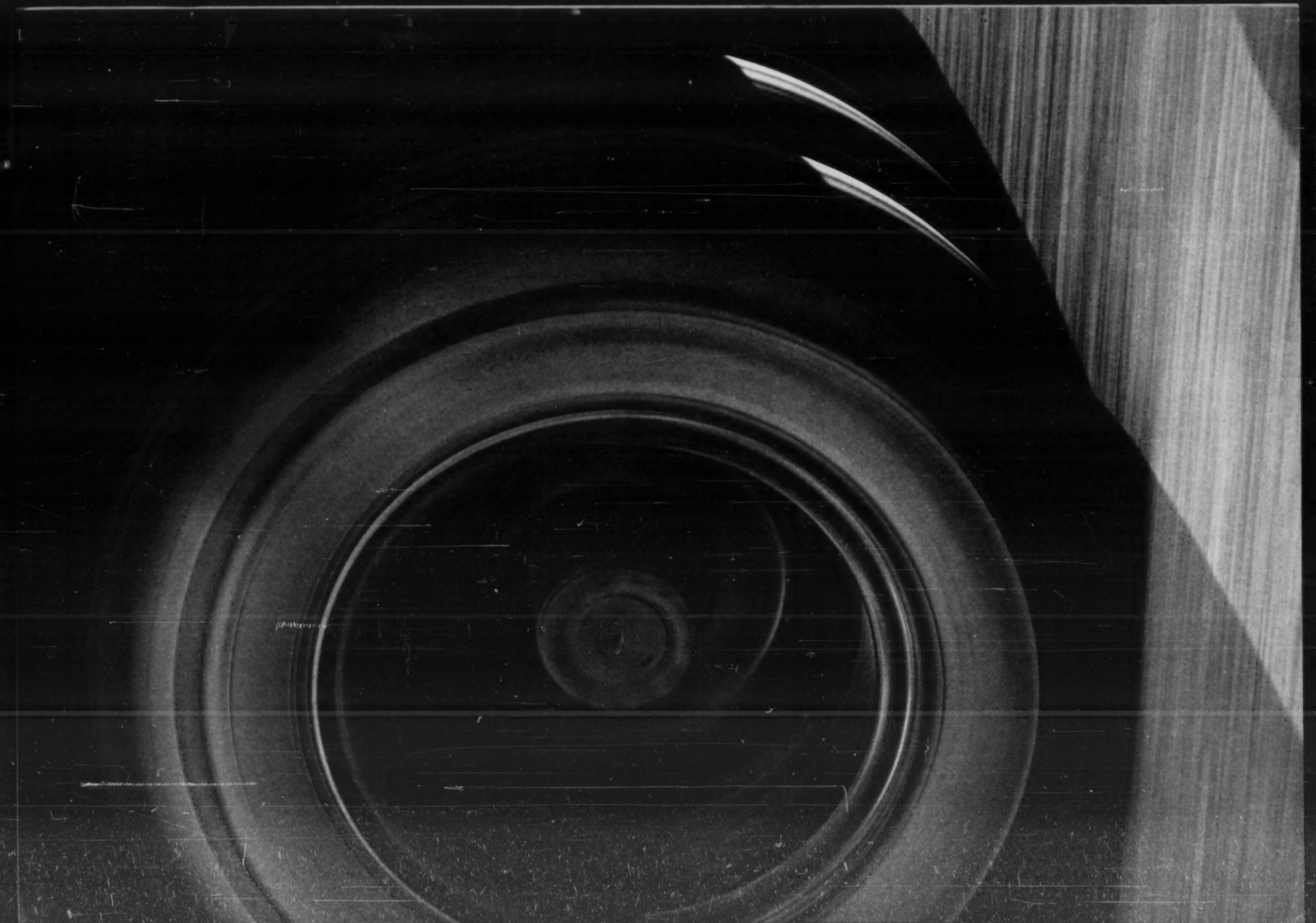
DAVEY TREE EXPERT CO.

DAVEY TREE EXPERT CO.

Kent 16, Ohio

MARTIN L. DAVEY, JR.
President

THE OLDEST AND LARGEST TREE SAVING SERVICE IN THE WORLD



THE STUFF THAT WHEELS ARE TURNED BY

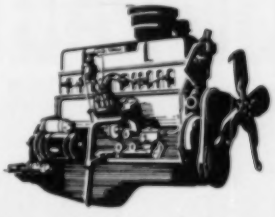
The accent's on torque in a big way for '62, in Chevy's new High Torque power lineup for medium- and heavy-duty trucks. New features, new performance characteristics, and even two brand-new extra-displacement V8's are tailored throughout the line to deliver a heaping hoodful of bulling, bruising torque—to dig in and move out under full capacity loads without a fuss. You'll find Chevy's brand of performance gives you a new kind of mastery over the toughest jobs you tackle, with brute-force breakaway power that just won't take no for an answer. There's no such thing as "no can do" when you're powered up the Chevy High Torque way!

High Torque 261 Six—Standard in Series 60 and 60-H models (GVW's up to 23,000 lbs.). Ideal for hauls that call for load-lugging High Torque power *plus* proved 6-cylinder economy. Delivers 235 ft.-lbs. of torque and 150 hp to handle maximum loads with low-cost efficiency. This engine backs up your bank account with brute strength to spare—with a forged steel crankshaft, high-alloy inlet valves, hard-faced exhaust valves with Rotocoils and much more.

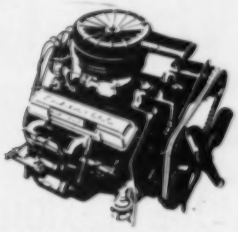
High Torque 327 V8—Optional at extra cost in Series 60 and 60-H (GVW's up to 23,000 lbs.). It's Chevy's newest and biggest medium-duty engine, ready to turn to with 305 ft.-lbs. of hard-pulling torque and 185 hp to tame your toughest jobs. Efficiency stays up, operating costs stay *low* with top-quality features like these: fuel-metering Power-Jet carburetor, durable precision bearings, aluminized inlet valves, hard-faced exhaust valves and full-flow oil filter.

High Torque 348 V8—Standard in Series 80 models (18,500- to 25,000-lb. GVW range). Provides 220 hp and 325 ft.-lbs. of torque to keep big loads moving at lowest cost. Comes equipped with scores of heavy-duty design features such as inside/outside carburetor air system that helps stabilize air supply temperature, highest quality valves and bearings, precision-engineered lubrication, cooling and ventilation systems. This one assures years of low maintenance, high mileage operation.

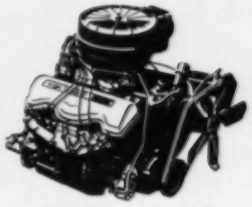
High Torque 409 V8—Optional in Series 80 models (18,500- to 25,000-lb. GVW range). It's the biggest, *pullingest* engine that ever powered a Chevy heavyweight. With a whopping 252 hp and 390 ft.-lbs. of torque, the High Torque 409 V8 is made to order for *extra* rugged runs. Long life and trouble-free performance are sure things, thanks to such special heavy-duty features as induction-hardened valve seats, forged steel crankshaft, new 4-barrel carburetor, to mention just a few. (For *all* the details on High Torque power for your job, see your Chevy dealer.) . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



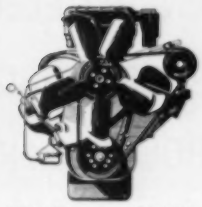
High Torque 261 Six



High Torque 327 V8



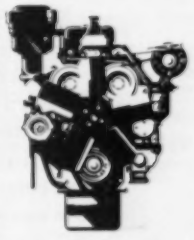
High Torque 348 V8



High Torque 409 V8

PLUS NEW GENERAL MOTORS SERIES 53 DIESELS

For '62 Chevrolet introduces new GM Diesels for medium- and heavy-duty trucks! Specially designed for lowest cost performance in Series D60 and D60-H (15,000 to 23,000 GVW) is the proved 130-hp GM 4-53 Diesel. And, for haulers who work in the Chevy Series 80 range (18,500 to 25,000 lbs.), the new 195-hp GM 6V-53 Diesel will be available soon. If you work your trucks near the limit with heavy loads, high mileages, severe stop and go or excessive idling, you're in for a pleasant shock when you find out how much a Chevy Diesel can save you!



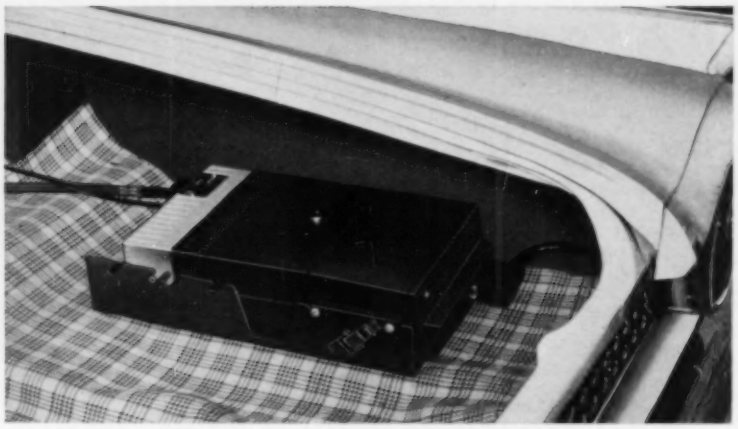
built to keep running and running and running and running and running and running and running and running

1962 CHEVROLET JOBMASTER TRUCKS

CHEVROLET

NEW COMPACT CONTROL UNIT

ADDS MORE FLEXIBILITY TO GENERAL ELECTRIC'S TRANSISTORIZED PROGRESS LINE TWO-WAY RADIO



The new design control head—half the size of previous control units — literally disappears under the dash—and you tuck the entire TPL radio unit into a corner of your car trunk.

This means a Transistorized Progress Line radio can be mounted wherever you like — under the dashboard, where its small size (9" x 15" x 4") allows ideal installation in most cars; or back in the trunk, where it takes little away from your cargo space.

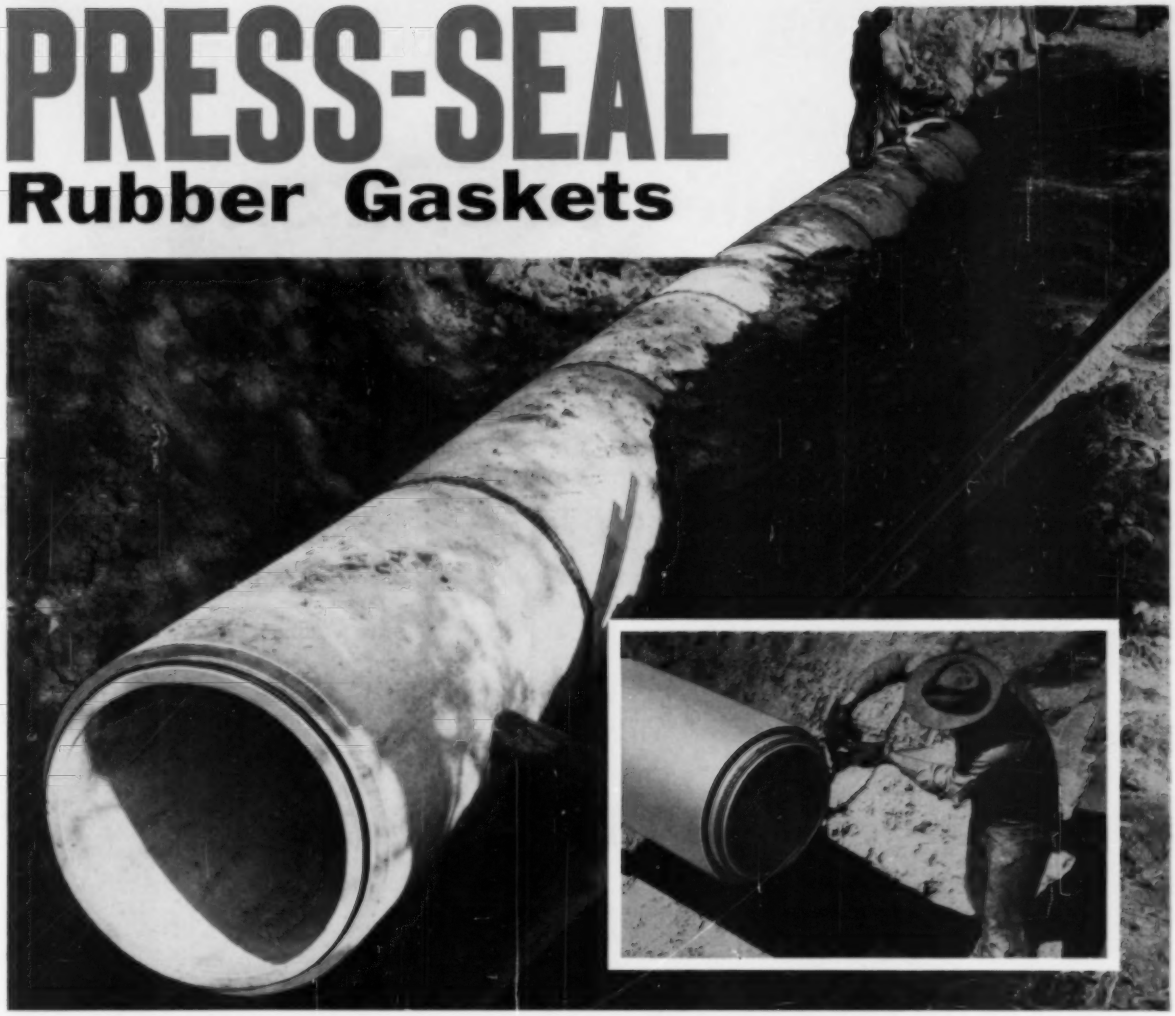
The compact new control head is small enough to fit in your palm, and can be mounted closer to the driver than previously possible.

General Electric Transistorized Progress Line two-way radio requires less power from your battery than any other two-way radio (only 40 milliamperes on standby), so that you don't have to keep your engine running (and waste gas) just to monitor your radio.

Get the full story on Transistorized Progress Line radio with the new compact control head. It's the most reliable, conveniently mounted and serviceable two-way radio you can buy today. Look under "Radio Communication" in the Yellow Pages, or write General Electric Company, Communication Products Department, Section IIII, Mountain View Road, Lynchburg, Virginia.

GENERAL ELECTRIC

PRESS-SEAL
Rubber Gaskets



permanently seal 20 miles of concrete pipe at
Chicago's O'HARE INTERNATIONAL AIRPORT

For the life of the pipe, Press-Seal rubber gaskets eliminate all possible infiltration or exfiltration at every joint in this Chicago airport project. Approximately 10 miles of the pipe, furnished by American Marietta Co., LaGrange, and Material Service Corp., Chicago, includes 12″ to 84″ diameter pipe with gaskets in manholes.

Contracting Agency: City of Chicago, Dept. of Public Works, George L. DeMent, Commissioner. Architect-Engineers and Consulting Engineers: Naess & Murphy, Chicago, Illinois. Director of Engineering: Walter G. Metschke. Utilities Coordinator: Raymond E. Wilson. Chief Construction Engineer: Edmund Plawin. Site Construction Engineer: Lyle Thompson. Construction Companies: Consolidated Construction Co.; Kenney Construction Co.; Picale Midwest Construction Co.; G. K. Newberg Construction Co. Pipe Suppliers: American Marietta Co., LaGrange, Illinois; Material Service Corp., Chicago, Illinois.

Write for detailed information and engineering data on Press-Seal confined compression type gaskets, including special materials for lines carrying oil content, acid content, or common sewage. Ask for our manual No. 4—Better Seals for Concrete Pipe. If you wish, send information about your special problems.

The lowest cost material item in any Pipe-line Project is a PRESS-SEAL Gasket

MANUFACTURED EXCLUSIVELY BY

TRADE

PRESS-SEAL GASKET CORP.

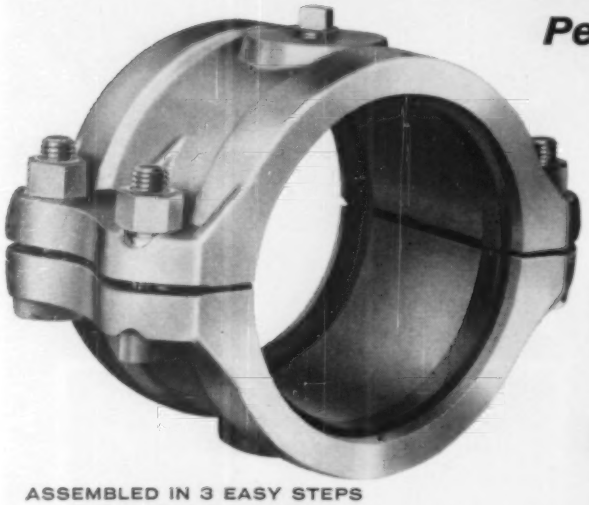
MARK

OFFICE AND PLANT: P. O. BOX 482, R.R. 6, COVINGTON RD.

FORT WAYNE, INDIANA • Phone Kenmore 5213

PRESS-SEAL GASKET OF CALIFORNIA—P.O. BOX 3054, SANTA BARBARA, CALIFORNIA
PRESS-SEAL GASKET OF CANADA—KITCHENER, ONTARIO

NEW CLOW
Ductile Iron Split Sleeve



Permits easier, quicker, permanent repair of 4", 6" & 8" transverse cast iron pipe underground breaks

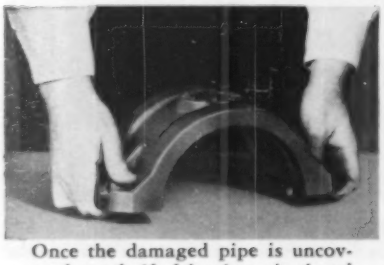
LIGHT WEIGHT Assembled 4″ diameter sleeve weighs but 26 lbs. Weight of 6″ sleeve is 32 lbs., 38 lbs. for 8″ sleeve.

SHORT LENGTH Effective length of 4 inches between end seals on all sizes. Overall length is 6¼″.

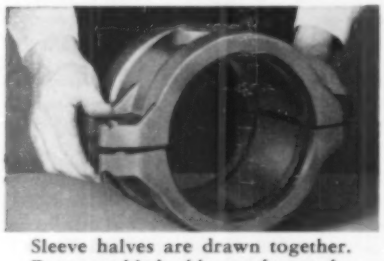
TWO-PIECE ASSEMBLY No end glands. Side and end gaskets are pre-assembled and cemented in sleeve grooves.

HIGH STRENGTH All parts are high tensile and corrosion-resistant. Sleeve halves are 70,000 psi tensile ductile iron. Nuts and bolts are high strength, corrosion-resistant alloy.

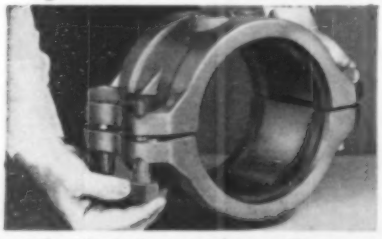
ASSEMBLED IN 3 EASY STEPS



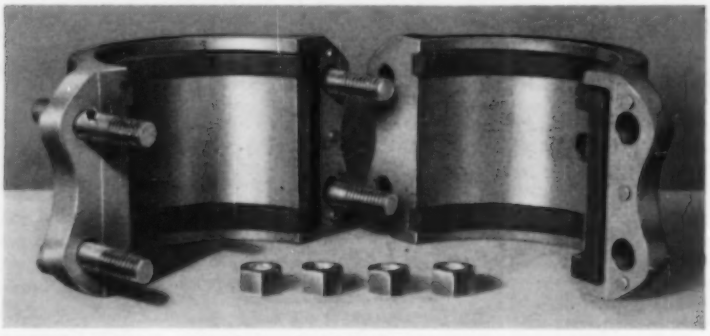
Once the damaged pipe is uncovered, one half of the sleeve is placed on each side of the pipe.



Sleeve halves are drawn together. Pre-assembled rubber gaskets make tight seal.



After the bolts are taken up finger-tight, tightening the four bolts by wrench completes assembly.



HERE'S ALL THERE IS TO IT! Illustration shows two-piece glandless construction. Side gaskets overlap ends of circumferential gaskets for tight seal. Four bolts are only accessories. Tapping boss on each half allows maximum tap of 2 inches. Regularly furnished with one sleeve-half tapped for ¾″ pipe.

JAMES B. CLOW & SONS, INC.

201-299 North Talman Avenue • Chicago 80, Illinois

Subsidiaries:
Eddy Valve Company, Waterford, New York
Iowa Valve Company, Oskaloosa, Iowa

Recognize this symbol of protection?

It's a Realock Chain Link Fence—the safe, permanent way to protect your property. Realock's quality fabric is made from top grade steel wire that withstands lots of punishment. For long-lasting protection, the fabric is expertly galvanized to prevent corrosion.

Realock Fence is available in a variety of styles. For a free estimate and complete details about Realock Fence, call the nearest CF&I sales office.

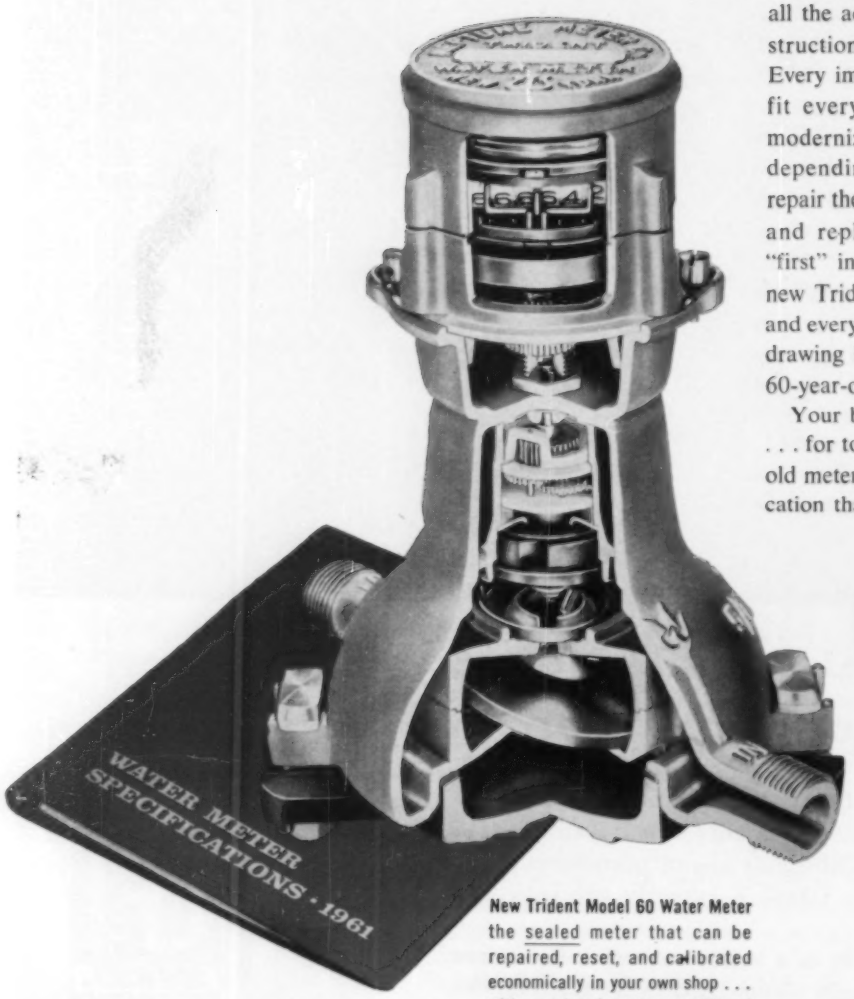
The Colorado Fuel and Iron Corporation
Denver • Oakland • New York
Sales Offices in Key Cities

are your meter specifications **REALLY UP TO DATE ?**

It's good business to take advantage of every improvement. It's also good business to avoid the pitfalls of progress . . . common pitfalls like obsoleting previous investments at a loss . . . or committing yourself to a new design that turns out to be incompatible with the next improvement . . . or burdening yourself with too many makes and models to take care of.

Trident disc meters give you flexibility, all the advantages of modern sealed construction, and protect your investment. Every improvement has been designed to fit every older Trident. You actually modernize any or all of your Tridents, depending on your conditions, as you repair them . . . at far less cost than "scrap and replace" programs. Every design "first" in Trident's history, including the new Trident Model 60 Sealed Meter . . . and every design improvement now on our drawing boards . . . maintains this rigid 60-year-old policy.

Your best assurance of up-to-date-ness . . . for tomorrow as well as today . . . for old meters as well as new . . . is a specification that reads "Trident."



New Trident Model 60 Water Meter the sealed meter that can be repaired, reset, and calibrated economically in your own shop . . . with complete interchangeability of parts that fit older Tridents and eliminate scrapping major units because of wear in minor parts.

neptune
METER COMPANY
LIQUID METER DIVISION
47-25 34th Street, Long Island City 1, N.Y.
OFFICES IN PRINCIPAL CITIES
In Canada: Neptune Meters Ltd.
1430 Lakeshore Rd., Toronto 14, Ont.

NOVEMBER 1961

The American City

Labor costs were $2.16 per inch per mile plowed by graders and truck plows.

An experienced public-works superintendent analyzes . . .

The Cost of Plowing and Removing Snow

. . . and finds that his overall charge totals $12.63 per inch of snow per mile of street maintained

By **CHARLES J. COLE**, Public Works Superintendent
Kingston, N. Y.

To predict more accurately the financial effects of budget-bending snowstorms, we now compute plowing and removal charges on the basis of unit costs. These lowest common denominators provide a real insight and will allow intelligent comparisons with past performance as well as with other communities.

Among the most valuable facts uncovered are those indicating that labor charges make up more than two-thirds of the total snow-fighting cost and that labor for removal soars to 18 times as much as that for plowing only. Another useful figure is the overall cost of $12.63 per inch of snowfall per mile of street maintained.

67.2% Labor

Based on charges compiled over the past seven years, Kingston's average annual snow-plowing and removal cost totals $43,563.45. In addition to consecutively higher labor and equipment prices, we have adopted some improvements typified

Kingston uses three loaders of different types.

by salting first-priority streets and hiring private trucks, both of which increase the cost of snow-plowing and removal but hasten the return to normal.

As the chart indicates, labor is the largest single item in the snow-fighting picture. It accounts for 67.2% of the total cost. Equipment maintenance runs a poor second at 20.6%. This item includes gas and oil, insurance, depreciation, repairs and related items. We spend 11.1% of the total for materials and supplies such as salt, calcium chloride, sand and similar items. The miscellaneous category at 1.1% includes hand tools and rentals.

The yardsticks of total cost per inch of accumulation ($1,686.30), and total cost per inch per mile maintained ($12.63) will provide the tools with which to measure future charges. The $56.21 charge per inch per 1,000 population allows for comparisons with other communities.

Kingston, although lying only 90 miles north of New York City, regularly receives almost twice as much snow as the metropolis' average of 30 inches. The local records for the past few years indicate the following totals:

1957-58: 51.75 inches
1958-59: 48.00 inches
1959-60 50.25 inches
1960-61: 67.75 inches

The Street Department clears the snow from 125 miles of paved streets in this city of almost 30,000. Each year revisions in the routing of plows and removal equipment are necessary. New subdivisions are established, businesses relocate and state highways change. Each of these requires a reassessment of the old procedures with a view to obtaining clean streets in the shortest possible time with a minimum of cost.

An Improved Plan

In 1959 we created an entirely new plan which differs principally from the preceding one with its various adjustments in that the improved plan classifies streets as first priority, second priority and outlying. Each of the 12 plowing districts contains somewhat proportional mileages of each street type. Each of the 12 crews clears the first-priority streets in its district before tackling those of secondary importance. The result of this quick service is that the first-priority system which moves traffic from one major sector of the city to another is always open to traffic. With the cooperation of the newspapers and radio and television stations, drivers now know which routes they can depend upon when snow strikes.

Salting

When the weather forecast indicates snow or sleet, we load two Walters trucks with salt. When the storm hits, these two trucks with their Torwel spreaders tackle the first-priority routes. Starting from the center of the city, one covers the uptown section while the other travels in the opposite direction. The "downtown" route includes 12.2 miles of travel to service 10.3 miles of pavement. The "uptown" operator travels 15.0 miles to salt 9.8 miles of pavement. These routes total 16% of the street mileage and require a total of 29 tons of salt for each application.

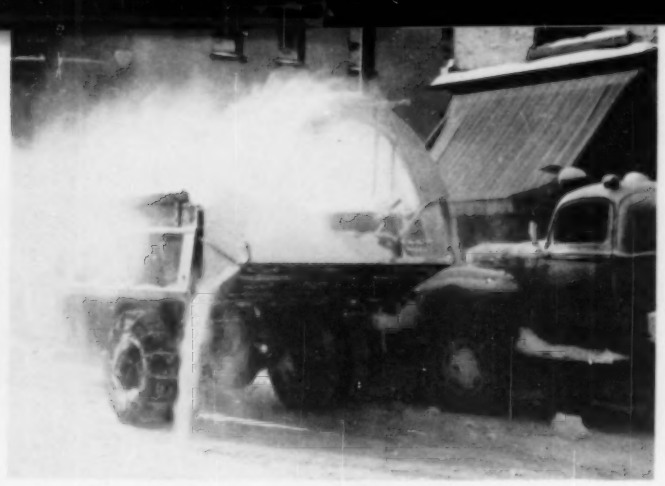
While these two vehicles cover the first-priority system, other trucks with tailgate spreaders distribute mixtures of sand and salt to the secondary routes. They apply these only to the intersections and steep grades, however.

When the total accumulation reaches two inches, all vehicles return to the shop for plow rigging. The plowing fleet consists of eight Walters trucks with center and nose plow mounts, six Chevrolet V-8 dump trucks with Baker plows and two Austin Western graders with nose blades. Those districts having

UNIT SNOW FIGHTING COSTS
the 1960-61 Season

Cost per Inch of Accumulation	$1,686.30
Cost per Inch per Mile Maintained	12.63
Cost per Inch per 1,000 Population	56.21
Cost Distribution:	
Labor (all operations)	67.2%
Equipment maintenance and operation	20.6%
Materials and supplies	11.1%
Miscellaneous	1.1%
Breakdown of Labor Cost* per Inch of Accumulation:	
Plowing	$ 265.82
Salt and abrasive spreading	212.35
Removal	660.57
Miscellaneous (sidewalks, crosswalks, etc.)	139.08
Total cost per inch of accumulation	1,277.82*
Labor Cost per Inch per Mile Plowed	2.16
Labor Cost per Inch per Mile Removed	38.28

* Includes labor charged to equipment maintenance.



The cost of snow removal in Kingston is 52 cents for every cubic yard.

From 17.5 curb miles, drivers hauled 75,000 cubic yards of snow.

the greatest lane mileage in the first-priority system employ more than one plow.

Our greatest bottleneck has been the presence of parked cars which require plow operators to simulate the motions of ballet dancers in wending their way out and around the offending vehicles. We often find it necessary to plow some streets four or five times to straighten the edges after drivers remove their cars. An adequate law restricting this parking would reduce the $2.16 labor cost per inch per mile plowed.

Last year the route supervisor tagged vehicles ahead of plowing with a courtesy ticket which requested owners to remove their vehicles. Although some did so, most of them did not.

Removal for $38.28

Although the labor cost for removing snow totals the substantial sum of $38.28 per inch per mile, we provide this complete service for areas fronting all churches, synagogues and funeral parlors. These properties number 43 and claim a large percentage of the 17.5 miles of curb traveled while loading. The balance of the mileage is in the central business district.

Last winter for the first time we hired private trucks to supplement our own hauling vehicles. The frequency of the storms dictated this move to speed removal and to release some trucks for plowing new accumulations. Measuring this snow in its compressed state in the truck boxes, we found that the drivers hauled 75,000 cubic yards at a unit cost of less than 52 cents. This, however, is 9% higher than the previous season's price due primarily to the rental fees for contractors' trucks.

The city's loading and hauling equipment includes the following:

1 Wagner Scoopmobile with ¾-yard bucket.

2 Barber Greene conveyor loaders.

1 Ford Industrial front-end loader with 1-yard bucket.

1 Sno-Go mounted on a Marmon-Herrington chassis.

1 Nelson conveyor loader.

16 Chevrolet, Ford, GMC and Mack trucks.

Although our Ford tractor clears some sidewalks fronting public property, most sidewalks fall to the hand-shoveling detail because the walks contain water stop boxes, oil pipes and parking meter posts which the plow might damage. The hand labor boosts the cost of this operation, but it does provide prompt and continuing service for the storm period. These shovelers have a supply of salt and calcium chloride which they spread to melt the last of the snow. They also clear the crosswalks at intersections and the pedestrian areas at bus stops. The tractor also performs an invaluable service by punching holes through the windrows left at intersections. ◄◄

To open the streets, plow operators must often make four passes as drivers remove their autos, one by one.

Following the plow, the salt spreader shoots the priority routes to remove the last snow.

Hattiesburg's second water plant provides an additional 6 mgd of water to the city and can be doubled in capacity when needed.

One new plant + one remodeled plant + two well fields add up to . . .

No Chance of Water Shortage Here

By **C. B. PATTERSON***

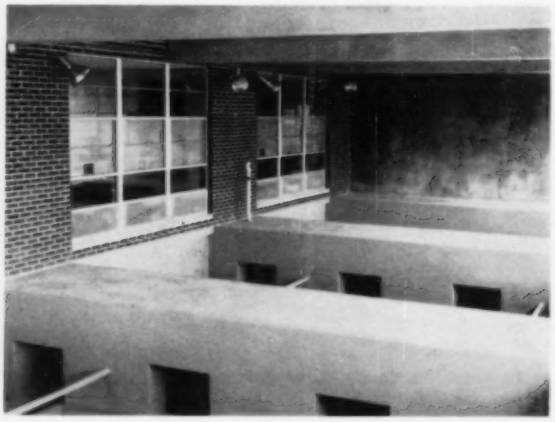
Parts of the rest of the nation may fret about water shortages but there is no such problem in Hattiesburg. Next summer our position will be even better. The completion of a new treatment plant with its own well field in early April provided the biggest boost to our goal of ample water for today and tomorrow. We are now in the process of modernizing our existing 5.0-mgd plant, keeping at least half of the plant operative at all times.

The two plants will serve this community of about 35,000 people adequately for many years. Placing them on the opposite sides of the city makes it relatively easy to serve new growth in any direction; extensive main construction included with our water program tied the new plant into the distribution system and strengthened weak sections. Finally, the new plant was so designed that we can double its capacity easily and at low cost.

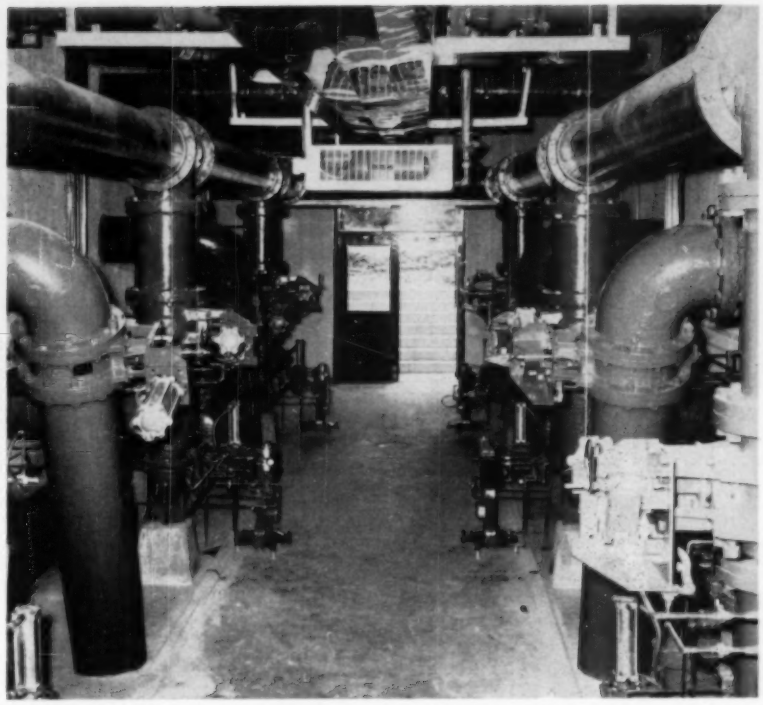
Four gravel-wall wells about 700 feet deep supply water to the new plant. They are located at approximately the four corners of the nine-acre plant site and pump directly to the distribution channel on top of the coke tray aerator. Equipment on each well consists of a 1,200-gpm Layne pump driven by a 75-hp Westinghouse motor.

After aeration, the water flows through a small basin where an Omega gravimetric feeder adds lime and an Infilco Vorti Mixer blends it with the water. The hopper feeder

* Mr. Patterson has been Commissioner in Hattiesburg, Miss., since 1960 and prior to that was employed by Hercules Powder Co. for 38 years, the last 25 of which he served as chief power engineer for the Hattiesburg plant.



The filter operating tables are enclosed within the main building (above); the filters themselves are outdoors but roofed over (right).



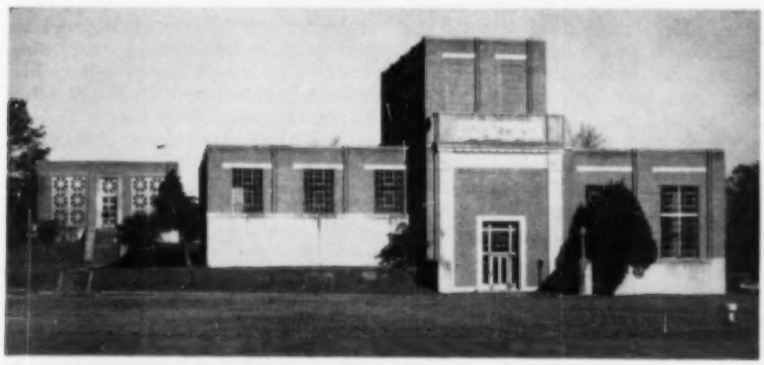
A maintenance-man's dream—a light and airy pipe gallery with ample working space.

extends to the chemical-storage floor above.

Filtration takes place in one of six rapid-sand units, each 12 feet by 24 feet in area with a capacity of 1.0 mgd based on a design rate of two gallons per square foot per minute. The central gallery or operating floor, with three filters on each side, is enclosed and the building roof extends over all of the filters. However, two sides of each filter group are not walled in. The filter gallery occupies one end of the building so that it can be readily extended when we need additional capacity.

The filters have Leopold bottoms, and two Palmer surface sweeps per unit to assist in cleaning. B-I-F consoles, butterfly-valve rate controllers, and backwash line valves govern their operation. And M & H gate valves provide final control. To change the filter rate, the operator need only adjust a control on the console to make the desired change in the pneumatic transmitter.

A roomy and, for the most part, above-grade pipe gallery provides easy access to all valves and fittings. This, too, can be readily extended when necessary. We can employ post- and pre-chlorination and have two V-notch Wallace & Tiernan chlorinators of 200-pounds-per-day capacity for this purpose. Each unit has its own Fairbanks-Morse scale with a Bristol instrument which records on a 24-hour chart the amount of chlorine used. The plant also contains a Wallace & Tiernan chlorine residual recorder.



Over 30 years old but still sound, the existing plant is now being remodeled and modernized.

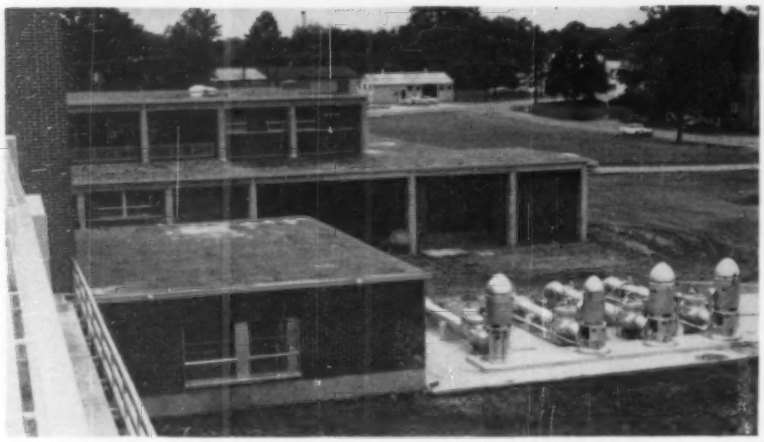
Storage and Pumping

The finished water flows to an underground concrete reservoir of 2,500,000-gallons capacity. Four Layne turbine-type pumps, with their weatherproof Westinghouse motors, take suction from this reservoir.

Their ratings are: two at 2,000 gpm with 150-hp motors; one at 1,000 gpm with a 75-hp motor; and one 5,000-gpm pump with a 100-hp motor. The last is for filter backwashing and the others for high-service pumping.

The discharge line of each high-service pump contains a Golden Anderson electrically operated, pneumatically controlled check valve that maintains a pre-established pressure in the system at the pump discharge. The discharge lines connect to a 20-inch transmission main leading to the city.

A panel in the control room contains switches for the various pumps, B-I-F instruments for recording water level in the reservoir and filter backwash flow, and Hersey-



This view, taken from the top of the aerator, shows the three high service pumps, one filter wash pump and associated piping.

Sparling instruments to measure the flow of water between the filters and the clearwell and the output of each high-service pump. All flow meters are of the indicating, totalizing and recording type.

Besides office space, the main building contains a fully equipped laboratory, a separate switchgear room with a Federal Pacific panel, ample storage space, and facilities for a meter repair shop. Our present meter shop is located in an old metal and wood shed near City Hall and has been outdated for many years. With slightly more than 10,000 meters in service, the new shop will be put to good use.

New work also included construction of some 25 miles of mains ranging in size from 6 to 20 inches in diameter. The four basic contracts consisted of:

- **Four wells with equipment, $88,000**
- **Iron removal plant with equipment, $717,000**
- **Five miles of 20-inch-diameter Price Brothers prestressed concrete pipe, $357,000**
- **Twenty miles of 6-, 8-, 10- and 12-inch-diameter, mechanical joint cast-iron pipe, $530,000.**

The treatment-plant contract also included complete landscaping with shrubbery included.

Our existing plant, constructed in 1930, is also used for iron removal employing coke aerators and rapid-sand filters. The well field contains 12 wells, seven that we still pump and five that at one time were free flowing. For the past few years this plant, which has a rated capacity of 5.1 mgd, treated between 4.5 and 5.5 mgd during the summer months. Peak-hour pumping ran as high as 9 and 10 mgd.

While most of the equipment and the structures are in sound condition, the plant does need renovating and we are investing about $150,000 in the project. The work will include repairing and refilling the filters and aerator coke trays, enclosing and replacing some electrical switchgear, installation of new lime and chlorine feeding equipment, construction of a laboratory, replacing valves and filter controllers, and structural repairs to the buildings.

Allen & Hoshall, consulting engineers of Memphis, Tenn., designed and supervised construction of the new plant and also have charge of the remodeling program. Some 30 years ago the parent firm, Thomas H. Allen, designed the existing plant. William R. Perrell is the resident engineer.

The water-improvement program took shape and construction started under the administration of Mayor Richard T. Carlisle and Commissioners Hugh M. Batson and Fewell Thompson. In June, 1960, the writer was elected to fill the vacancy created by Mr. Thompson's retirement and practically all of the construction work was carried out under his direction and that of Water Superintendent John T. Nelson. ◄◄

Urges Tax on Land Instead of Buildings

Shifting local real-estate taxes from improvements to land would improve the character of urban land use, reduce sprawl, and encourage building and capital investment, suggests Mary Rawson, land economist of Vancouver, B. C., in the Urban Land Institute's fourth Research Monograph, "Property Taxation and Urban Development." The ULI of Washington, D. C., an independent research organization specializing in urban planning and development is currently developing a research program dealing with the effects of taxation on urban land uses.

Tax levies would be more constructive if property taxes on improvements were abandoned and applied only to land, the author suggests. This tax, bearing no similarity to Henry George's "single tax," is now widely used in New Zealand and Australia and has been partially adopted in a few American cities.

Such a tax, writes Miss Rawson, has a tendency to bring sites into use by discouraging the practice of holding vacant or ill-used urban land. The removal of the tax on buildings, she continues, would make them a more attractive investment and would increase the intensity of land use.

The inhibition of land speculation by a land-value tax would reduce a major cause of urban sprawl, the Monograph contends. The exemption of buildings from taxation and an increase in land levies would provide a "double incentive" to owners of derelict structures to demolish them and to use the land more intensively.

She believes that a land-value tax would eliminate situations where higher taxes are paid on a lot occupied by a well constructed building in good repair than by its opposite—a poorly constructed building poorly maintained. Under today's tax structure, the owner of the building which is a credit to the city, is required to pay higher taxes than one who builds a poor building or allows his building to decay. The less the poorly maintained property is required to pay by reason of its continuing deterioration, the more the well-maintained property is asked to contribute in taxes. It is a misapplication of the principle of ability-to-pay that brings about this frequent but incongruous situation.

Copies of the 54-page Research Monograph Four at $4 a copy are available from the Urban Land Institute, 1200 18th St., N.W., Washington 6, D. C. ◄◄

Winter patching in Normandy consists of using a special bituminous mix that can be placed in a wet hole . . .

. . . without the use of special tools or heating the mix or street surface prior to application . . .

Mid-Winter Pot-Hole Patching

. . . saves the streets from winter damage and assures motorists in Normandy, Mo., a safe, smooth ride

By **WALTER A. LUNDHOLM**, Mayor

. . . or compacting it with a roller to prevent traffic from breaking the patch or scattering the material.

As soon as the snow is off the street, our maintenance crews exchange their cargoes of salt and cinders for patching material and immediately begin repairing pavements damaged by snow and ice. This assures safe, smooth travel the year around.

Key to the success of the program is a specially designed year-round, all-purpose bituminous mix known as Blacrete. It consists of crushed limestone, graded and screened to a particular specification, dried and heated in a regular hot-mix pug-mill mixer, and mixed dry with hydrated lime prior to coating with MC-2 or MC-3 cut-back asphalt. The cut-back asphalt is fortified with an additive known as "Certan" (distributed by the Endreson Corp., 237 E. Delaware, Chicago, Ill.) and heated and circulated for a minimum of one hour prior to the mixing operation. We purchase our material from the Rock Hill Asphalt & Construction Company of St. Louis.

This material is easy to handle even under the most adverse conditions. The area to be patched requires no special preparation and the work can be performed in sub-freezing temperatures and under wet and frosty conditions. The unusual cohesiveness of the material prevents it from scattering about when left to the normal flow of traffic, thereby eliminating the need for a roller.

Our crews use both a pick-up truck and a dump truck, which are loaded from our own stockpile. In most cases the truck wheels provide initial compaction, with further compaction provided by the normal flow of traffic.

Another advantage is the complete absence of waste. Unused material remaining on the truck at the end of the work day is deposited back on the stockpile for use at a later date. These advantages justify the slight increase in cost of this material over conventional bituminous mixtures.

The Town of Normandy, being part of the St. Louis metropolitan area, experiences considerably more traffic than most communities of comparable size. Thus, we must consider the safety of our own citizens and that of many other people who use our streets on a daily basis.

We have tried out various materials and methods for making winter repairs. After two years of experience with the method described here, we feel that it is a satisfactory and economical answer to the ever-increasing winter road-maintenance problem.

This year we began using the material in summer, also, to patch small holes that do not justify the use of a roller, primer tank and hot-mix asphalt. ◄◄

Secondary clarifiers treat the sewage prior to chlorination.

Largest Biofilter Plant In the East

. . . features high-rate trickling filters and a remodeled pumping station with an annular wet well

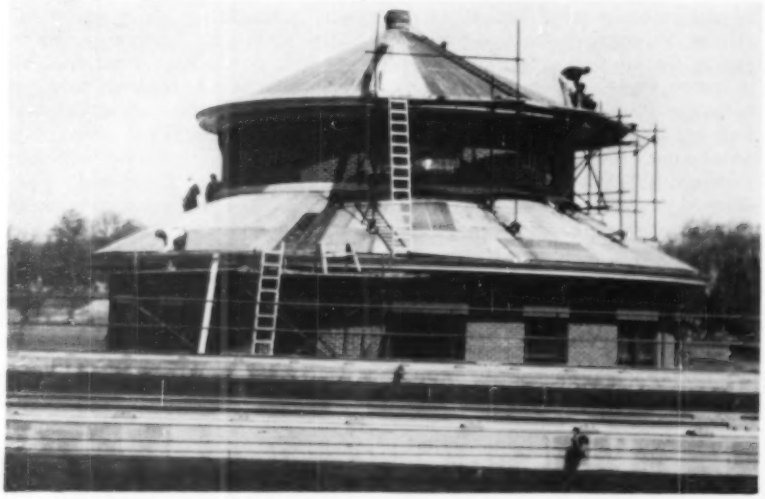
By **JOHN F. VOGLER***
Municipal Engr., Sewers
Trenton, N. J.

We believe that Trenton's new sewage-purification plant is the largest of the biofilter type east of the Mississippi River. At a design rate of 20 mgd, the new plant will adequately serve this capital city's 114,-167 residents.

Situated on Duck Island at the southern extremity of the city, the new high-rate trickling-filter plant discharges into the Delaware River and replaces an Imhoff plant constructed in 1926. The designers of the old plant anticipated the eventual addition of trickling filters and provided sufficient area for them. Many things, the depression, World War II and the Korean conflict, served to postpone the rebuilding.

All of the Trenton sewage reaches the plant by gravity flow through the 66-inch-diameter main trunk paralleling the Delaware River. The trunk sewer invert at the plant site is approximately one foot above normal river elevation.

The main trunk enters the plant beneath the screen and grit chamber building which also contains the wood shop, machine shop, auto shop and the screen and grit-removal equipment. The sewage passes



Remodeling the old annular-type pumping station proved economical.

* Prior to 1957, Mr. Vogler was a sanitary engineer for American Cyanamid after being graduated from Rutgers University with B.S. and M.S. degrees in 1948 and 1950, respectively.

Recirculation enhances effluent from the four high-rate filters.

The new garage encloses the screen and grit-removal equipment.

through the inlet valve chamber and through three mechanically cleaned screens and three mechanically cleaned grit chambers. Chain Belt equipment removes the screenings and grit to Dempster containers for eventual burial.

After leaving the grit chambers the sewage flows to the remodeled pumping station. The old structure was very similar to the one at the plant in Albany, N. Y. Both were circular in shape, 54 feet in diameter and contained a ground-level motor floor and a deep, dry-pit pump floor directly beneath. The sewage flows into the annular wet well surrounding the dry pit. The remodeling of the old structure included new tile walls on the inside, new windows and roofs on the outside and various smaller items.

The piping and equipment on the inside is all new. To eliminate the old system which consists of long shafts connecting the motors above to the pumps below, we installed both in the bottom of the dry pit. The new pumps include three 8-mgd horizontal De Lavals and three two-speed 6- and 11-mgd De Lavals. These units draw the sewage from the annular space and speed it to the clarifiers through a manifold composed of ACIPCO fittings.

Westinghouse rebuilt three of the 1948 synchronous 440-volt motors and furnished three new ones for the six pumps. The new driving shafts now measure only a few feet in length.

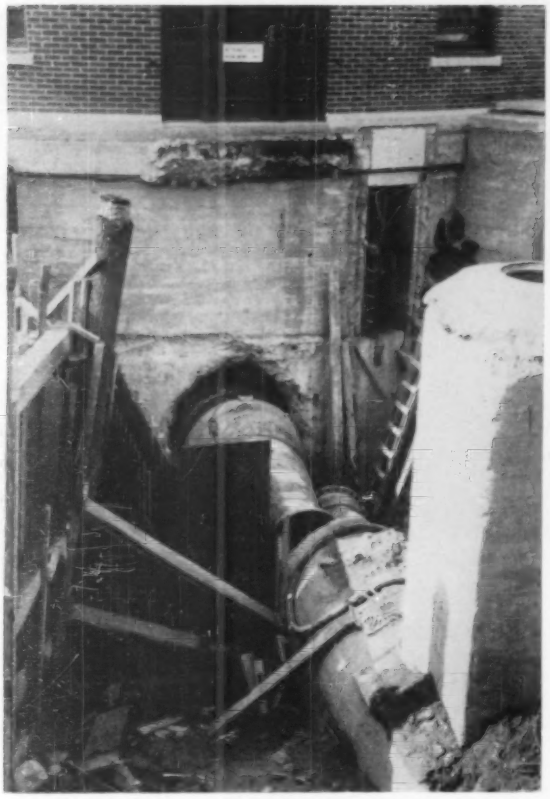
The ground-level floor of the station now houses a new electronic control center which indicates plant operation at a glance. This equipment illustrates instantaneous readings while recording for a permanent record. Lights indicate which pumps, clarifiers and other equipment are in use. Warning lights and horns caution the operator of high-sewer, wet-well and water-tank levels, clarifier overloads or failure of the recirculating pumps. Another instrument records the rate and total volume of flow measured by a Venturi meter outside the station.

Primary Clarifiers

The pumping station forces the raw sewage to eight primary clarifiers, each 40 feet wide, 115 feet long and 7.3 feet in average side water depth. Each tank incorporates a Dorrco Monorake for sludge and scum removal during the detention period of 2½ hours.

Eight control units in the primary-sludge pumping building coordinate the operation of the primary-sludge pumps with the cleaning cycle of the Monorakes in each tank. The operator sets automatically actuated adjustable timers in order to obtain the least dilute sludge from the tanks.

From the clarifiers the sewage flows to the filter recirculation pumping station which mixes one part of clarifier effluent with an equal or smaller part of trickling-filter effluent and returns the mixture to the trickling filters. Four vertical De Laval pumps, two of 5-mgd capacity and two of 10-mgd capacity perform this task. Each of the four trickling filters is 175 feet in diameter and contains an average



The old 66-inch line receives the sewage from pumps inside the station.

The contract specified the destruction of the top portions of the old Imhoff tanks.

depth of six feet of trap rock sized from 2½ inches to 4 inches. All incorporate four-armed Dorrco distributors with a capacity range of 3,500 to 9,250 gpm. Filter loading is at the rate of 2,000 pounds of BOD per day per acre foot.

The portion of the filter effluent which is not subject to recirculation flows to two 125-foot-diameter secondary clarifiers. These Dorrco-equipped mechanisms are nine feet deep and incorporate a detention time of two hours.

Four chlorine contact tanks, each 24 feet wide, 96 feet long and 5 feet deep, detain the effluent for one-half hour. Three Fischer & Porter chlorinators and one evaporator accomplish this task. The pre-chlorinator has a capacity of 2,000 pounds per day, the two post-chlorinators furnish a total of 8,000 pounds per day. A railroad siding at the site provides for convenient delivery of the plant.

The chlorine building features an easily operated safety shower just outside the door for emergencies.

The final plant effluent flows to the Delaware River just a few miles below the point where Washington made his historic Christmas Eve river crossing prior to the Battle of Trenton in the Revolutionary War days. The river provides a dilution of not less than 80 to 1.

Dorrco diaphragm pacer pumps propel the primary sludge to a sump. From this sump, Carter plunger pumps transport it to the primary digesters.

Each digester is 75 feet in diameter and has a side depth of 28 feet. Two function as primaries, the other two as secondaries. Dorrco covers top the primaries which contain circulating sludge mixers. The others have frosting covers and other gas-utilization equipment which includes heat exchangers.

Digested sludge flows by gravity to 40 acres of lagoons on the plant site. The available lagoon volume is sufficient for 75 years of operation.

Water Supply

The plant construction included a Pittsburgh-Des Moines 500,000-gallon water-storage tank. Because the plant is at the end of a relatively small distribution line, we found that it would be more economical to include the tank and a pump than to rebuild the line.

In operation, we fill the tank during the night when system demand is low, closing the connection to the system during the day to prevent loss.

Construction of the plant presented some difficulties for the contractor for two reasons:

- **The bottoms of the digesters and secondary clarifiers are 12 feet below river level (the contractor employed a Griffin well-point system for nine months).**
- **To reduce pollution, the pumping station and one battery of Imhoff tanks had to operate until the latest possible moment.**

Clinton Bogert Engineers of New York City designed and supervised construction of the plant. Charles Simkin and Son performed the general contracting portion of the work. Donald J. Connolly, Commissioner of Public Works, directed the construction of this $5,500,000 project. ◄◄

Windsor, Conn., survey shows that from both financial and social standpoints . . .

Garden Apartments Are Good

By **ROBERT B. WEISS***
Town Manager

Behind Town Manager Robert B. Weiss (left) and Lee Syracuse, town planner, are Windsor's new 115-living-unit garden apartments.

Increasing pressure for multiple dwelling units brought about the 115-living-unit Windsor Garden Apartments development in Windsor, Conn., in the summer of 1960.

When some 86 units were rented, it became apparent that a study should be conducted to determine the social and financial impact of this development upon this predominately single-family-dwelling, rural-residential town just north of Hartford, Conn.

The planning office, therefore, prepared a questionnaire—asking for the number of children and adults in an apartment, number of bedrooms, ages of residents and occupations of parents, if both were working. Windsor Boy Scout Troop 149 volunteered to carry out the survey.

Survey conclusions showed the following:

- **The project is made up of family complex of husband and wife, showing little representation of the unmarrieds, widows, or widowers found in urban apartments.**
- **In 51 apartments, there are 39 children, or seven children to every ten apartments. In comparison, the average Windsor home in two representative subdivisions has 2½ children per dwelling unit.**
- **In the nine $108 one-bedroom apartments, there were no children. Of the 52 $135-$145 two-bedroom apartments, 18 had no children and the rest had from one to four children. This shows that garden apartments are not conducive to the raising of children and as the family grows, parents tend to leave the apartments in favor of one-family dwellings.**
- **The concept of garden apartments providing first homes for newly married couples is valid in this study. The average age for all 88 adults was 34 (under age 40 the average age was 28; over 40, it was 52). It seems the project has helped balance the make-up of the community by bringing young married and older married adults into Windsor.**
- **Average age of the 39 children in the development was 4.1 years, with one school child for every four apartments. A comparative survey of two representative subdivisions in Windsor found that a new family development immediately produced one child of elementary-school age per unit.**
- **The occupations of both husbands and wives clearly show the garden apartment project not only serves the specialized needs of the industry of that area (particularly combustion engineers) but also represents a pool of unusual intellectual attainment which can be tapped by the town.**

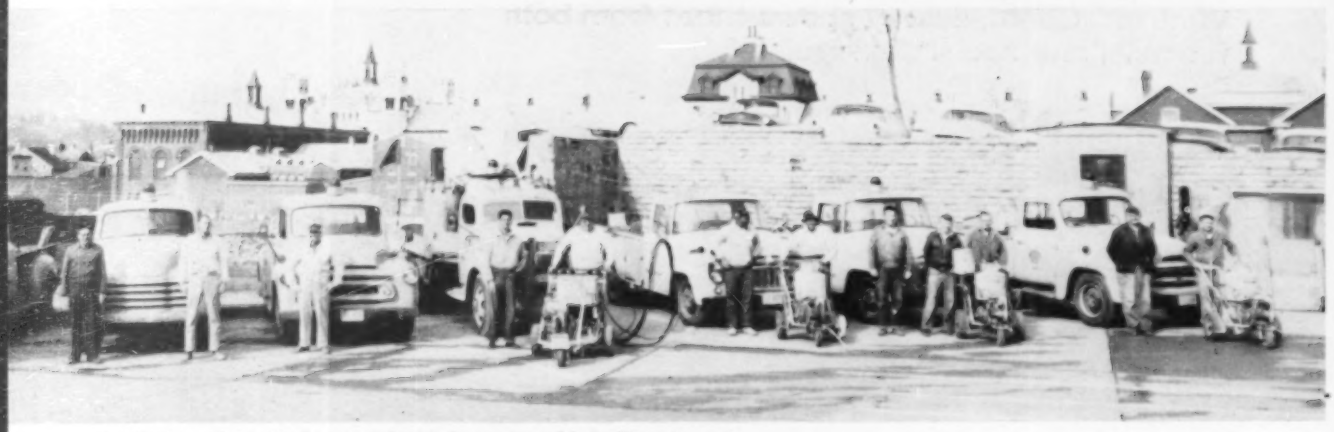
Financial Report

As for taxes the project seems to carry itself. If the project had been finished in 1960 and the town tax rate of that period applied to it, the town assessor *estimates* the taxes on it (not including personal property) to be $32,943. Yearly cost for town services for the 311 apartment-dwelling residents was only $19,438.78.

The survey also shows that all the interior roads in this project were built and are maintained by the developer and due to the fact that Windsor Avenue is a state highway, no money is expended by the Public Works Department on the Windsor Garden Apartments. Based on the survey results, the Planning Commission revealed that the Windsor Garden Apartments project lives up to their expectations. ◄◄

---

* Mr Weiss has been town manager of Windsor, Conn., since 1953. He was previously town manager of South Berwich, Maine, and administrative assistant of Keene, N. H.



On "P-Day minus 2" the special task force assembled all equipment, inspected it, and reviewed procedural details.

Cincinnati Paints Traffic Lines

. . . in the downtown area and cuts time needed by 75%

By **WILLIAM C. WICHMAN**
Director Department of
Public Works

Traffic conditions encountered by the Highway Maintenance Division of the Department of Public Works during the semi-annual repainting of traffic lines in the congested area slowed this Division's operations in the area drastically and so restricted traffic that police assistance was necessary to eliminate the resultant confusion.

Even then, there were occasions when our crews were ordered from the area during periods of heavy traffic flow, particularly on those streets where traffic speed averages 8 to 9 mph.

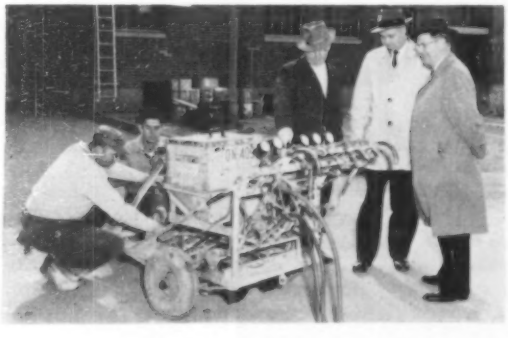
The severity of these circumstances brought about a conference with Carl V. Gailey, Superintendent of the Highway Maintenance Division, and as a result we decided to paint in this area on Sunday when the traffic volume is at its lowest count.

Organization

Plans for a Spring "P-Day" started immediately. Supervisory personnel set dates and formulated details of the operation. These included a press release to the newspapers; letters to the Chief of Police asking for police assistance; and to the Cincinnati Transit Company requesting dispatcher and operator cooperation while driving through the area. They then formed a special P-Day organization consisting of 26 workmen and plotted specific assignments on a map of the downtown area to facilitate the over-all operation.

One week before "P-Day," the nine line-painting crews received briefings on all phases of the operation. At this time, crew members discussed assignments accenting the details of how each job was expected to progress and alternate work locations where each crew would move in the event of emergencies. It was decided that a foreman should report to the communications center early on Sunday to receive calls from all crew members. He was to advise them if work would continue as planned or be postponed, an arrangement provided in order to cover any last-minute changes in the weather.

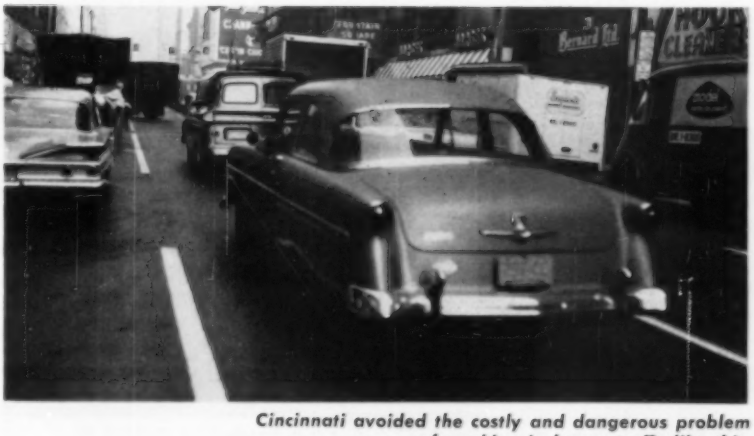
On Friday all crews assembled in the yard two hours before quitting time. For the balance of the day they cleaned and checked all equipment, drew supplies, loaded vehicles, and made those preparations neces-



The Sunday program permits efficient use of big triple-line markers like this one.

With Sunaay traffic at a virtual standstill, the crew quickly painted the traffic lines and suffered no paint smears.

On Sunday



Cincinnati avoided the costly and dangerous problem of working in heavy traffic like this.

sary to permit the crews to leave the yard on Sunday with no delay.

For this work, the Division assigned the following principal pieces of equipment:

Eight ¾-ton trucks to carry materials, equipment and tow line-marking machines on trailers.

One 1½-ton platform-stake body truck to transport and place traffic cones.

One 1½-ton platform truck with two 60-gallon Devilbiss paint tanks, which supply the triple-line marker.

One Kelly-Creswell triple-line marker, able to lay double four-inch lines and a single six-inch line, with reflective bead dispenser.

Five Kelly-Creswell single-line marking machines.

Three portable paint-spray units with truck-mounted, 25-cfm air compressor.

With this preliminary planning, the crews were able to start laying paint on Sunday within 20 minutes after starting time. In some cases, they applied enough paint to certain critical areas within the first hour to constitute a full day's work during the week.

The work began on those streets closest to the river, progressing north. This plan allowed the crews to complete the most critical area first. A line marker, with paint and air hoses coupled to large tanks, and compressor mounted on a truck directly behind the marker started on the east and west streets, traveling from one side of town to the other, describing a rectangular pattern.

A police officer with a flashing red light preceded this rig to permit continuous movement through intersections regardless of traffic light conditions. This arrangement provided for continuous laying of paint and permitted the passing of rubber traffic barriers from the dry paint to that freshly laid.

In the meantime, smaller crews were painting the north and south crosswalks in the same streets where the larger marker was laying lane lines. After the lane lines were dry, the east and west crosswalks were installed. In this manner, the painting continued from the river front to the upper and outer edges of the core area. The line-painting organization completed 81,800 lineal feet of line.

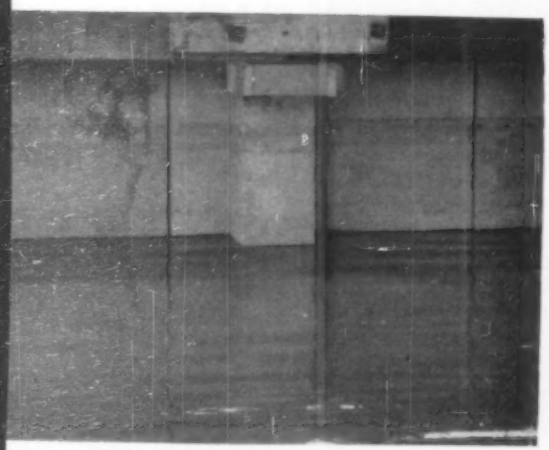
Evaluation of Sunday line-painting operations indicates it is completed in less than 75% of the weekday time; it precludes traffic jams caused by weekday painting, does not interfere with downtown business operations, and permits the use of larger equipment. ◄◄

The daily removal of floating debris increases the safety of pleasure boating.

Fort Lauderdale's program of dredging, cleaning and assistance proves that . . .

Waterways Need Continuous Maintenance

The dockmaster tows a disabled cabin cruiser to a berth.



Concrete panels, with tongue-and-groove edges, prove to be a popular form of seawall construction.

By **T. M. BATCHELOR***

Contrary to the opinion of many, waterways do not take care of themselves. Here in Fort Lauderdale, we find it necessary to employ a Docks and Waterways Division of the Public Works Department to maintain the 280 miles of waterways in this community of 83,648 persons. The division's outstanding performance has helped to earn the title of "the Venice of America" for our city.

Waterway maintenance consists primarily of three tasks: dredging, cleaning and assistance. Three men, three boats, two barges and, on occasion, part-time personnel perform these duties.

Continuous dredging combats the silt deposited by the rivers flowing through the city on their way to the ocean. This year we expect to remove 11,000 cubic yards, 2,000 more than last year's total. To accomplish this task, we use a Schield Bantam dragline with a 0.4-yard bucket. A barge loads this half-track-mounted vehicle at streets which come to an end at the river or from adjacent vacant lots.

Debris

The operator removes the offending material to the required channel depth of four to five feet. When debris fills the barge to capacity, the operators unload it onto the dead-end streets or vacant lots. When the silt dries, the Park Department spreads it or hauls it away on trucks.

A large navy-surplus buoy tender tows the barge and dragline from place to place. The Garage Division designed and constructed the barges to provide a safe clearance between the spans of the many narrow bridges which dot the city, because standard barges are too wide for the short spans.

Palm fronds, hyacinths, grass, logs, dead fish and tree branches comprise the bulk of the floating debris which department personnel remove and leave at a loading point for disposal by the Parks Division. The employees transport floating dead fish far out to sea so that they will not float ashore. Last year the accumulated weight of these undesirable objects totalled 350 tons, almost one ton per day, which proves that this service is necessary if we are to maintain a clean river which will

---

* Mr. Batchelor is the administrative aide to the public works director. He formerly worked for the City Manager of Lake Worth, Fla. He was graduated from Florida State University with a degree in Public Administration.

attract tourists as well as provide safe maneuvering for all water enthusiasts.

The "Bucket of Bolts," a 26-foot steel boat used by the men who perform this cleaning task, is also used in patrol work, in spraying, and in fogging for the mosquito-elimination program. After storms or periods when the rivers contain much debris, park personnel supplement the normal crew on this craft to speed the task.

Assistance

The Superintendent of the Docks and Waterways Division, H. T. Olsen, is a former sea captain who has spent much of his life on the water. During his daily tours in a small 14-foot outboard boat, he answers complaints, makes seawall inspections, and assists residents and boat owners. A stranded craft in the middle of the river is a source of potential danger to navigators. It's a rare day that Mr. Olsen does not aid some mariner in trouble. The superintendent performs this task by making minor repairs on the spot, towing the disabled craft to the side or calling for assistance. He uses a simple method of removing silt settlements from docks and this often eliminates the need for the barge and dragline. He ties his boat to the dock and "revs" the motor. The resulting turbulence agitates the new deposit and propels the resulting mixture of silt and water to the middle of the stream where the current sweeps it to the ocean. Where feasible, this method saves hours of travel and work for the dragline, thus allowing it to concentrate on more important tasks.

The Seawall

Inspecting the city's 5,200 feet of dock space and the portions of the seawall which the municipality owns requires much of the superintendent's time. His division reports monthly to the Director of Public Works about necessary repairs, the life expectancy and the condition of the seawalls. It pays dividends to keep these walls in tip-top shape by performing minor work as soon as the need becomes apparent. If minor repairs are postponed, the incessant action of the water widens the breach and brings the repair bill to major proportions. The inspector often discovers the need for repairs to privately owned sections of the seawalls and reports this as a service to the property owners. Frequently he gives advice on the required corrective action.

The city makes its own seawall repairs to the minor cracks and breaks but contracts for the bigger jobs and new construction work. Leaching causes the greatest amount of damage to the seawalls and the area immediately behind them. When a seawall base does not reach the depth of the hardpan, the water eventually leaches the soil from under the wall, and causes it to drop and crack. Usually the dirt abutting the seawall disappears. Contrary to popular belief, the wake from boats does little or no harm. We have found that the best way to repair seawalls where leaching is a factor is to dig a trench behind the wall, insert a wooden or metal slab to hardpan depth and fill the space with concrete.

Four basic types of seawalls exist: poured concrete, prefabricated slabs, tongue and groove and "graham cracker." The poured concrete type, the oldest, is seldom used now because it is the most expensive. Because the prefabricated type is low in cost per year life, it is now popular for permanent construction. We believe that the tongue and groove type seawall is the best because the pile drivers make certain that the bottom reaches the hardpan level. This type also requires little or no maintenance. Its only disadvantage is the high initial cost which prohibits its use in many instances. The "graham cracker" wall, sometimes called a rubble wall, is the most popular because of its relatively inexpensive construction. Maintenance is not costly.

Municipal Docks

Extensive repairs and beautification of New River where the city's municipal docks lie will take place in the next few months. The reconstruction work will include seawall repairs, new sidewalks, and parking strips at an estimated cost of $25,000. The Parks Division will landscape the area for an additional $12,000. Our aim is to beautify and maintain the river channels and surrounding area to such a degree that the world will refer to Venice as "the Fort Lauderdale of Europe." ◄◄

The dragline clears the channel bottom from its position on top of the barge.

Sinking sidewalks give evidence of leaching.

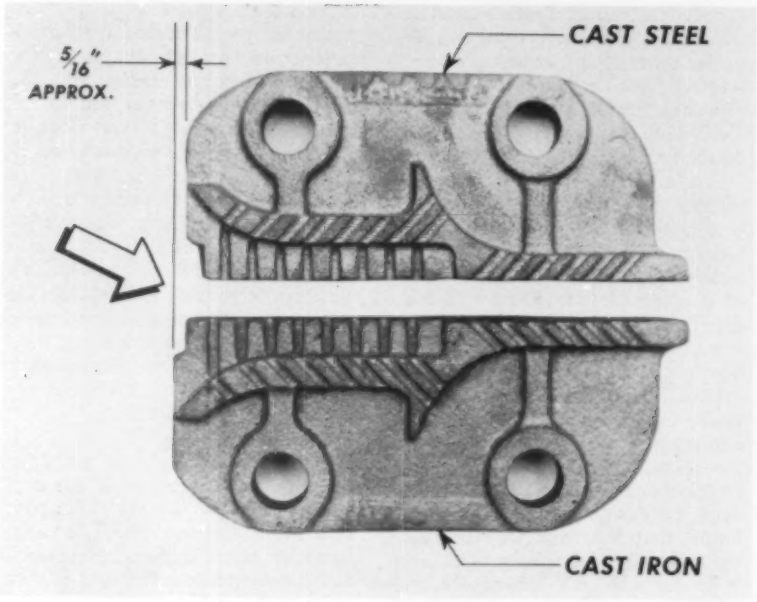


Fig. 1—A comparison of two links, one made of cast iron, the other of steel, after being heated to 1,650° F for 20 hours.

How Hot Is "Too Hot" In an Incinerator?

Some answers to the problems of metal expansion, growth and breakage in municipal incinerators

By **JOHN B. CAINE**, Technical Consultant
Illinois Stoker Co., Alton, Ill.

TWO MAJOR TYPES

There are two major types of travelling grate stokers currently in use for incinerator purposes; the "chain-grate" and "bar-and-key."

The effect of excessive temperature on links of a chain-grate stoker is of considerable significance since the links move the stoker. Therefore, both growth and creep at elevated temperature are significant. The effect of excessive temperature on the links of a bar-and-key type stoker is of lesser importance. These links are under no load; therefore, creep is no problem. Jamming, either mechanical, or due to growth still must be considered.

The growing use of incinerators exposes an ever-increasing number of city officials to some of the problems associated with the use of metals at elevated temperatures. An understanding of metal behavior at these temperatures, along with some knowledge of how one can compensate for this behavior, will reduce the seriousness of these problems.

Undetected hot spots can almost be taken for granted in any heat chamber unless precautions are taken. If this overheating is not corrected, breakage may occur if the links are made of cast iron. A basic problem is temperature measurement. It would seem that any type of thermometer attached to a metal part should determine its temperature, but this is not always the case. Metals are good conductors of heat if in one piece, but a series of metal parts—even though they are touching—conducts heat relatively poorly. Secondly, if a stream of gas flows past the attached thermometer, the temperature registered will be nearer that of the gas than the metal.

Why overheating should cause breakage may be puzzling at first, but a brief discussion of growth and loss of elasticity resulting from the exposure of metals to high temperatures will explain this behavior.

Some metals, particularly cast iron, grow at elevated temperatures. Permanent growth occurs even at no load, and is dependent on both temperature and time. Growth differs from expansion and contraction caused by heating and cooling since the growth is permanent, and expansion is temporary.

All metals lose their elasticity when heated. At temperatures over about 600° F all common metals stretch, or deform under lower loads than they will support at room temperature. Equally important, they keep on stretching with time. At temperatures under about 500° F, metal will stretch, or deform under load in relation to the amount of load, and snap back to the original dimensions when the load is removed. Not so at elevated temperatures. Deformation called "creep" occurs that is dependent on time as well as temperature and load.

The first behavior, growth, explains why cast iron links are more liable to break if overheated. Overheating in itself does not cause breakage; it causes the links to grow till they bind and lock. When they cool, they jam. Cast iron, a brittle metal, cannot deform and must break.

This problem may be solved by:

1. Eliminating overheating, but this

is not as easy as it sounds. Growth is accumulative. Growth due to short accidental overheatings adds up even though the overheatings are not high enough to cause visible redness.

2. Using cast-iron alloys, particularly one with chromium to increase thermal stability.

3. Using a metal such as steel that does not grow regardless of how it is heated and for how long. Steel has the additional insurance of ductility. It will deform rather than break if mechanical jamming occurs. This is the safest solution.

Table I gives an indication of the amount of growth cast iron undergoes due to temperature and time. Usually the growth is measured in thousandths of an inch per inch and is not visible unless magnified by a number of links in series. Growth at red heat is visible after just a few hours as shown in Figure I, showing a cast iron and steel link heated together at 1,650° F for 20 hours.

When a load is applied at temperatures over 600° F, all common structural metals stretch, or deform by creep. The question is, "how much?" The deformation of beams shows up to a greater degree than tensile stretching. Table II summarizes the amounts for three metals at different temperatures for a relatively low load of 3,000 psi (6,000 psi modulus of rupture).

The deformations at the lower temperatures of Table II are not visible except in large structures. At the higher temperatures of Table II, deformations are visible even in 12 inches and after 1,000 hours or less as in Figure 2. Even greater resistance to heat can be obtained with higher-alloy steels, but such steels are costly, from 50% to 500% more than ordinary steel. High-alloy steels will carry load when red hot and will resist scaling.

Selecting the best metals for use as links in an incinerator stoker should be determined by the same factors used in specifying metals for any application. Certain metals are more suitable than others for all temperatures from room temperature to over 3,000° F. They include, in their approximate order of resistance to heat in relation to cost from least effective to most effective: gray iron, malleable iron, ductile iron, carbon steel, low-alloy steel, high-alloy steel and the nickel-tungsten-molybdenum "super" alloys. The best metal is not necessarily the lowest-priced metal per pound, but the lowest-priced metal that *will do the job* over a satisfactory period of time. ◄◄

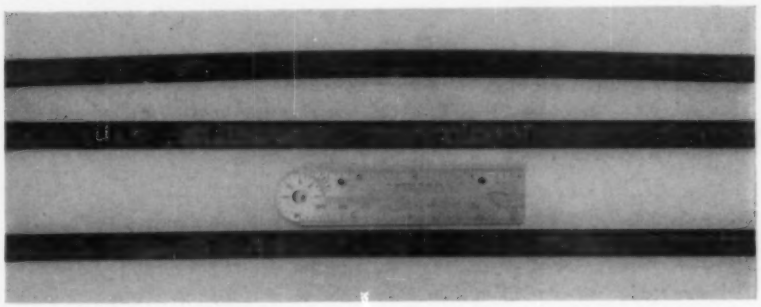


Fig. 2—At high temperatures, relatively minor increases in temperature can produce visible effects. Above, deflections after 1,000 hours at 800° F under a 3,250 psi load. Below, the same metals show considerably greater effect at 900° F with the same load but fewer hours of exposure to high temperature.

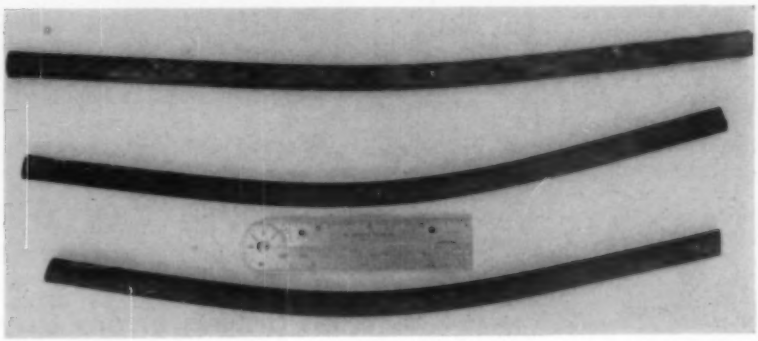


Table I

Growth of Gray Cast Iron When Heated

Temp. Degrees F	Chromium Content	Growth inches per foot	Remarks
930	nil	1/64 to 1/32 in 1,000 hours	Continuous heating
1,250	nil	1/16 in 120 hours	Cyclic heating
1,472	nil	3/8 in 500 hours	Cyclic heating
1,472	0.5%	1/8 in 500 hours	Cyclic heating
1,472	1.0%	1/16 in 500 hours	Cyclic heating
1,650	nil	7/16 in 20 hours	Cyclic heating

Table II

Permanent Sag First 10,000 Hours as a Simple Beam
Inches Sag per Foot of Span

Metal	700° F	800° F	900° F	1,000° F
Cast iron	.05	.40	over 5.0	—
Carbon steel	.007	.14	1.0	over 5.0
Alloy steel (0.5% molybdenum)	nil	.014	.04	.21

Permanent Elongation First 10,000 Hours in Tension
Inches per Foot

Metal	700° F	800° F	900° F	1,000° F
Cast iron	.001	.040	over .25	—
Carbon steel	nil	.003	.17	over .25
Alloy steel (0.5% molybdenum)	nil	nil	.001	.06

At real-estate-tax-billing time, the operator programs the tax rates into the calculator and then processes the cards comprising the Real Estate Heading File through that machine at the rate of 6,000 cards an hour. The calculator computes the taxes and punches the information into the file, thus making it the billing deck.

Pittsburgh's Punched Cards

. . . from driving errors to water requirements

By **DAVID A. SMITH**
Treasurer
Pittsburgh, Pa.

Punched-card equipment is bringing speed, efficiency and a high degree of accuracy to a variety of Pittsburgh municipal tasks. These include water billing, traffic-ticket collections, traffic-accident statistics, city payroll, city-pension records, and criminal-identification data. We are studying use of it for other applications based on the success of those already machine-processed.

For example, one installation is handling the city's tax collection in one-fifth the amount of space and with lower administrative costs than would be needed with manual procedures.

Pittsburgh's 600,000 residents receive approximately 3,000,000 tax bills from the city treasurer annually. They pay $64,000,000 in real-estate, water-revenue, mercantile, amusement, school, personal-property, and earned-income taxes.

Yet, with the machine system, the city treasurer's department can record payment of a tax within 24 hours after it is posted or collected. We even process tax payments in peak periods, such as the annual real-estate-tax billing, without overtime.

This IBM data processing provides the means of locating tax delinquents quickly and assigning them for the attention of the department's enforcement division. The result has been that the tax-collection rate has been constantly above 97%.

And the present procedure, by repetitive use of the original, punched-card record, gives a continuous, internal audit. Accurate, up-to-date information is constantly available for the treasurer and other city agencies.

The city's taxes are as follows:

Real-estate tax, 130,000 accounts, $29,000,000 in revenue, levied annually.

Mercantile tax, 10,000 accounts, $2,500,000 revenue, levied annually.

Amusement tax, 6,000 accounts, $1,000,000 revenue, levied annually.

Earned-income tax, $5,500,000 revenue, levied quarterly. There are three methods of paying this tax: 20,000 employers withhold for their employees; individual collections are made from about 25,000 persons whose employers do not withhold; and 15,000 self-employed persons pay on their net profits. This tax applies to all persons who earn money in Pittsburgh. During the 1960 World Series, for example, the New York Yankees not only suffered defeat by the Pirates but also paid taxes on the income which they earned while playing in the city.

Water revenue, 125,000 accounts, $8,500,000 levied quarterly.

Per capita, 380,000 accounts, $1,800,000 levied annually.

In addition, the data-processing installation also handles collection of all delinquent sewage-service charges, assigned by the Allegheny County Sanitary Authority amounting to about 12,500 accounts.

Pittsburgh has other IBM punched-card installations. For example the Traffic Court punches a card for every ticket and every disposition. These cards are checked by machine to determine which persons have not responded to their tickets.

The Police Department, in addi-

The operator feeds the deck into the accounting machine which prints the bills. Immediately after they are prepared, the billing deck is run through an adjacent accounting machine which prints a billing register.

This register goes to a facsimile posting machine which posts, by copying one line at a time, each billing to the proper unit ledger card. These cards are designed to provide a 15-year history of the account.

Record Everything

tion to maintaining traffic-accident statistics on punched cards, uses data-processing equipment to prepare duty rosters and to keep an enforcement record of officers by precinct.

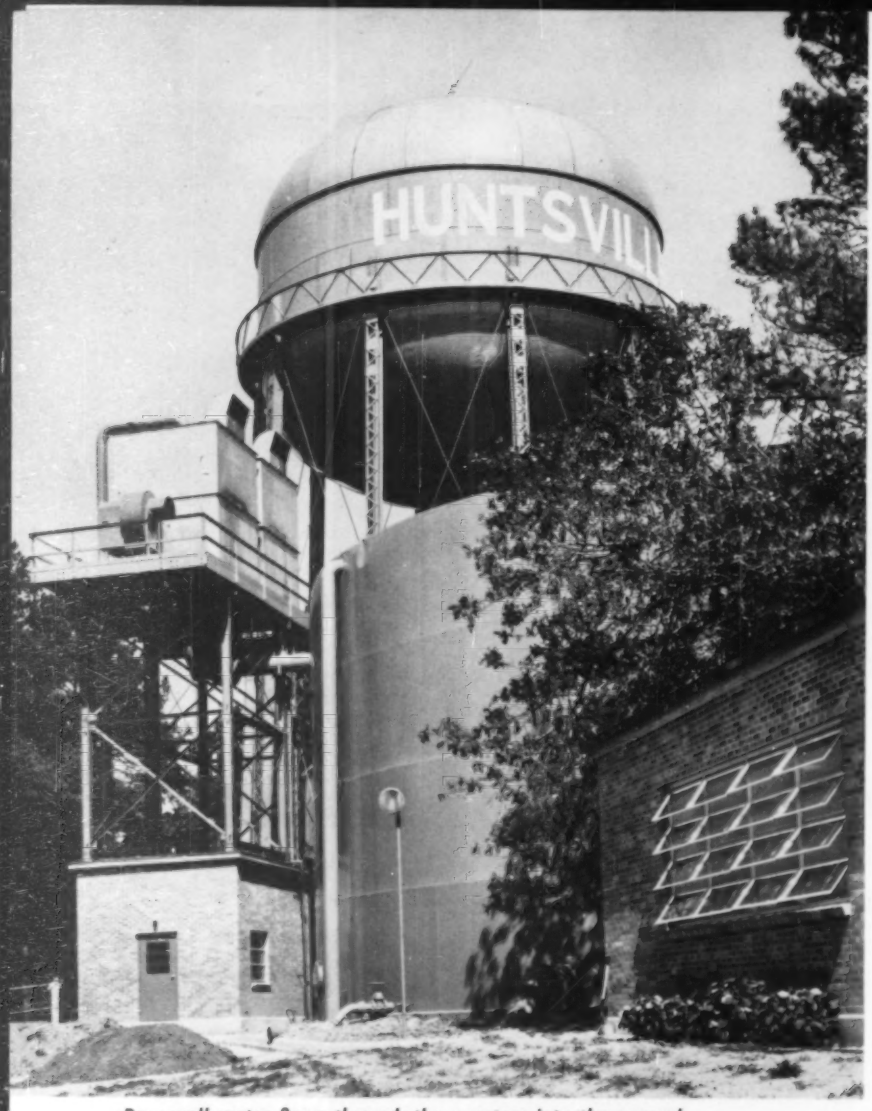
The newest Police Department innovation is the maintenance of a punched "Arrest Card" which contains the physical characteristics of anyone arrested. Speedy mechanical sorting of these cards facilitates quick identification of suspects. It is planned to place 35mm slide pictures on the cards to facilitate identification even more.

Future Application

In the near future, the city expects to use punched-card installations for property recording and to assist in data collection for the City Planning Commission. In the past, that commission has made use of the treasurer's lists of properties and assessments for re-development studies.

Thus, punched-card processing, with its inherent speed, accuracy and flexibility, is becoming an ever more important administrative tool for the City of Pittsburgh. ◄◄

When the tax is paid, one copy of the bill is used to create a cash payment card. At a specified time, cash cards and billing cards are merged into a collator which selects annual payments, quarterly payments, and delinquents.



Raw well water flows through the aerators into the ground storage tank by gravity and is then pumped into the elevated tank and distribution system.

No More Treatment Than Necessary

Field investigations indicate that aeration and the addition of caustic soda are all that are needed to solve Huntsville's taste, odor and iron-staining problems

By **N. B. DAVIDSON**, City Engineer
Huntsville, Texas

New wells tapping a deeper aquifer solved our water-supply problem but brought on the unexpected ones of taste, odor and iron staining. While we did avoid the expense of constructing and operating a filtration plant, the solution required double pumping, something we originally hoped to avoid.

Prior to 1958, Huntsville obtained all its water from five wells ranging in depth from 673 feet to 980 feet. Originally we aerated this water and softened it at a central plant, but, in later years, eliminated most of the aeration.

Anticipating the need of more water, the city engaged William F. Guyton & Associates of Austin, Texas, to make a ground-water study. Test wells drilled in 1957 by Layne Texas indicated an adequate soft-water source at depths of 1,270 feet and 1,475 feet. These investigations resulted in the drilling of a 1,475-foot-deep well in 1958 and two 1,270-foot wells in 1959. Pumping equipment, supplied by Layne & Bowler of California, consisted of two 500-gpm, 16-stage units and one 700-gpm, 16-stage pump. The wells are about 2,200 feet apart.

Complaints Begin

We pumped water from the new wells directly into our south elevated tank and into the distribution system without treatment other than chlorination. The old tanks were used only to supply some raw water to the Texas State Prison.

Shortly after the changeover in supply, many customers began complaining about bad taste, odors and iron staining. In December 1959, Mrs. Kate Barr Ross, Manager of Utilities, asked Layne Texas to help solve the problem.

Field investigations conducted by representatives of Layne Texas, the General Filter Company and water-department personnel indicated that hydrogen sulphide caused the taste and odor problem and that iron pick-up in the mains, due to corrosiveness of the water, caused the stains.

Recommended corrective action consisted of aeration to oxidize the hydrogen sulphide and any other objectionable gases that might be present and to release the free carbon dioxide, plus the addition of caustic soda to stabilize the water. The adoption of these recommendations meant that we could no longer pump directly into the mains and this necessitated construction of a pump station and the use of an ex-

This modern brick building houses the water production superintendent's office and . . .

isting 1,000,000-gallon ground-storage tank.

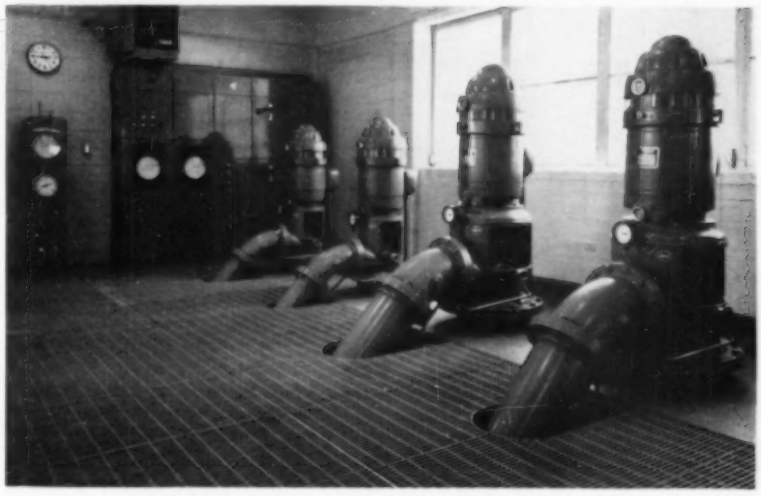
The well pumps now discharge into a battery of two 1,500-gpm General Filter aerators of the forced-draft type. Locating the aerators on top of a steel tower adjacent to the ground-storage tank permits gravity flow from the aerators into the tank. A brick building at the base of the tank houses the chemical-feed room and a meter repair room.

The use of aluminum in fabricating the aerators should keep our maintenance requirements to a minimum.

A Sparling meter controls the feed rate of caustic soda and chlorine in proportion to the flow. Chemical-feed equipment consists of one Milton-Roy caustic soda feeder and two Wallace & Tiernan chlorinators; the latter are located in a separate room in the new pump station.

One chlorinator is completely automatic and one is a manual unit for emergency use. Provisions allow for the introduction of chlorine in the effluent line of the aerators; in a by-pass line should the aerators be out of service; and in the influent line to the aerators should this ever prove desirable.

The new brick pumphouse contains four Layne pumps that take water from the storage tank and discharge into the distribution system, a 500,000-gallon elevated tank adjacent to the pumphouse, and to a 400,000-gallon elevated tank located in another section of the city.



. . . four booster pumps automatically controlled according to water levels in the ground storage and elevated tanks.

These are short-coupled, two-stage units installed in vertical suction wells. Two are 1,000-gpm units at 85-foot head driven by 40-hp U. S. motors and two are 2,000-gpm units with 75-hp motors.

Control Center

The custom-built Autocon control center includes a sensor unit which checks water level in the ground-storage tank and adjacent elevated tank every minute, stopping or starting wells or booster pumps to maintain predetermined water levels.

The pump station also contains the office of Water Production Superintendent George Baisoon.

While the three wells produce all the water now used by the city (around 3.0 mgd) we are now in the process of drilling a fourth well which should increase our capacity by about 1.0 mgd. Thus Huntsville, with a population of about 11,000, is now on the safe side as far as water needs are concerned.

The new system was completed under the administration of Wilbourn S. Gibbs, mayor, and Frank Sprott, mayor protem and chairman of the Water Committee. ◄◄

The versatile crane makes light work of loading, unloading and stacking drainage conduits of all sizes. The crane also goes on the road to lay pipe and do other field work.

A Five-Ton Crane Is a Handy Thing

In a public-works yard it performs 90% of shop and yard tasks normally requiring heavier special-use units and does the work at substantially lower cost

By **ALBERT P. RETTLER**
Highway Commissioner
Washington County, Wis.

The efficient operation of a highway department, like that of any municipal public-works facility, depends a great deal upon the smooth performance of shop and yard work. This is particularly true in today's equipment age; when equipment breaks down or is tied up, field work also bogs down.

Our department maintains 609 miles of state and county roads in a 413-square-mile area. Work includes street maintenance, snow removal, and a considerable amount of new construction. We lay all our own drainage pipe and last year resurfaced some 50 miles of road. The department's hot-mix asphalt plant uses about 1,500,000 gallons of oil a year and the portable crushing plant can produce up to 150 tons per hour.

To support this operation, the shop must keep 500 pieces of equipment in good condition, including more than 100 wheeled and tracked vehicles. On any average working day, general shop superintendent Joe Weiss and his crew of five mechanics know that 10 or 11 trucks, graders, mowers, rollers, or other tracked or wheeled vehicles will require maintenance. A field man also spends time on the road, handling oil changes, greasing and other jobs.

Flexible Tool

One of our newest additions, a mobile, five-ton hydraulic crane with telescoping boom, is proving to be a real time and money saver. This unit, an Austin-Western Model 110, tricycle type, replaces a 1½-ton mobile crane which was just too light for many of the shop's loads. Many times when the light crane or our ten-ton overhead electric crane would not serve, we had to bring in heavy tracked cranes and occasionally front-end loaders from the field. In the latter case a hook, welded to the bucket, served the purpose, but was never ideal. Often shifting equipment meant a delay on some field work.

With the mobile crane on hand, the other units can work more efficiently on their main jobs, and we can use the electric-shop crane more efficiently. In fact, we frequently send the new crane, which is capable of traveling at 19 mph, on over-the-road assignments to supplement or substitute for some of our other units. These include setting up the asphalt plant, which we may relocate as often as six times a year, helping to move the portable crusher, and laying culvert.

We operate from a modern, two-level building at West Bend. The upper level houses repair areas, supply rooms, storage areas and offices. The lower level provides garage areas for heavy equipment and additional storage areas.

The ten-ton electric crane in the upper level handles considerable heavy work, but often it may be

tied up on a job or cannot be used because of its limited travel. Here the Austin-Western becomes most useful. Jobs consist of moving sander bodies and other equipment into and out of the paint-spray booth, mounting bodies, removing and replacing engines and removing snow plows from storage on a selective basis without the need of shifting a number of plows.

The trunnion steering design permits the crane to turn completely in a 13½-foot radius, giving the vehicle sufficient maneuverability to thread its way through the shop, between columns and among equipment. The telescoping, hydraulically actuated boom that can reach out over 18½ feet is particularly useful in reaching over equipment and supplies or into tight places.

Often we found it necessary to move a deadlined truck, grader or other piece of equipment from the lower level to the upper level. This generally required a truck and towline, for in many instances plows mounted on the trucks prevented them from being used as pushers. Thus the tow truck often became trapped in front of the vehicle to be repaired. Now we use the crane as a pusher. It moves the "dead" equipment up the 5% grade from the lower to the upper level, pushes it into the repair area and leaves for other duties.

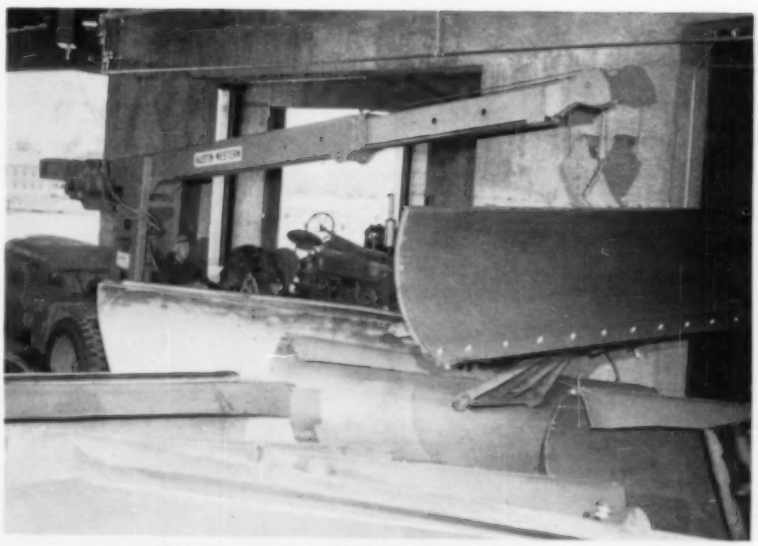
Yard Uses

We receive our drainage conduit via flat-bed trucks and store it in the garage yard. A large crane performed the task of unloading and stacking the pipe and subsequently of loading it onto our own trucks for delivery to the job site. While even the larger pipe, 24, 32, and 36 inches in diameter, is relatively light, it was too heavy and cumbersome to be handled safely by our old 1½-ton mobile crane. The new five-ton hydraulic crane handles this pipe with ease and performs the job three times as fast as the large crane. This ease and speed has cut down operating costs. The large straight-boom crane cost $6.36 per hour to operate. We estimate that operating costs for the Model 110 runs between $2.50 and $3 an hour.

One often hears about the need for equipment utility in the field to combat high costs and reduce investments in machinery designed to do special tasks on a seasonal basis. This same utility need applies to shop and yard work too and our versatile crane supplies one of the answers to this problem. ◄◄

Routine tasks for Washington County Highway Department's new mobile crane consist of pushing "dead" vehicles from the lower storage area to the upper repair area of the garage . . .

. . . raising truck bodies or other items to expedite repair work . . .



. . . and removing snow plows from storage on a selective basis. This is one job where the telescoping boom pays dividends.

Preserve Those Old Trees

. . . and make better and more livable neighborhoods

Trees left standing create an impression of dignity and provide shade.

By **NENO JOHN SPAGNA**
Director
Planning and Zoning Dept.
Hollywood, Fla.

City planners have traditionally recognized the value of standing trees in newly designed neighborhoods and have encouraged their intelligent use and preservation. However, few, if any cities, have laws specifically designed to prevent their wanton destruction.

Builders, developers, and planners have mixed views about the overall benefit of preserving the standing trees in new subdivisions. In an effort to shed light on this problem, the Hollywood Planning Department conducted a survey of the newly developed Hollywood Hills Subdivision. Investigators interviewed the developer, individual builders, and many home buyers, to get their views.

Mr. Arch Jones, vice-president of the company currently developing over 1,800 homesites in Hollywood Hills, considers the trees a valuable asset on any new development. He saves every tree that he can and would gladly relocate a proposed street rather than destroy the trees growing in its right-of-way.

He finds that it costs no more to prepare the site, leaving the trees. The city does not permit burning the cut trees on the site because the smoke would disturb the surrounding residents. The extra cost of trucking the trees away would have amounted to about the same as the cost of grading and leveling around the trees which are retained.

Most builders agreed that standing trees are not the final factor in selling a new home but, in many instances, the beautiful trees did help prospective buyers make up their minds.

Home Owner

Investigators interviewed 30 recent homeowners or about one third of the total sites now occupied on which trees were preserved.

A majority said that the standing trees did not influence their purchase; however, it was significant that 40% said that they did. Many who said that they did not consider the standing trees the crucial factor in their decision to buy were quick to add that they were glad that the trees were on the property and considered them as an extra advantage. It is also very significant to note that after having lived with the trees for some time, a whopping 77% testified that they are now glad that the developer had left them.

Survey Opinions

About 90% of the persons interviewed believed that the trees enhance the appearance of the neighborhood. This included many who did not want the trees on their own property. Similarly, 87% agreed that the trees improved outdoor living and raised the value of the neighborhood as a whole.

Only 23% considered the trees a nuisance and 77% believed the trees were worth any extra maintenance or expense connected with them.

A very significant finding was that 77% said that if they were to buy another home in a new development, they would prefer one with standing trees.

When prompted for the reasons

for this preference, the following advantages were cited:

- **Trees retard the erosion of top soil, absorb and transpire excessive waters, and shelter homes from high winds.**
- **Improve outdoor living, provide early shade (important in a hot climate) for patios, barbeque areas, and swimming pools.**
- **Provide more elastic play area; children imagine trees to be real-life props for their make-believe games.**
- **Provides natural cover for birds, squirrels, and other wild life.**
- **Breaks up the monotony of a sterile, treeless skyline.**
- **Serve as reference landmarks and directional guides.**
- **Gives the area the impression of stable, well established residency, eliminates "new-subdivision" look.**
- **Affords greater opportunity for individualized landscaping of property.**
- **Improves appearance and environmental texture of neighborhood; the sentinel character of the slash pine has a "picture-window" quality which makes the area distinctive. Live oaks, covered with Spanish moss, adds a touch of unmatched quaintness and serenity—the scent of slash pine fills the air.**
- **Increases the saleability of homes in the neighborhood.**

One old white-whiskered cracker answered very simply, "Don't ask me why I like it. I know every needle in that old pine and every bird that perches in it. I can recognize its top from anywhere in the neighborhood. If it were to be cut down, it would be like losing my right arm."

Lest the reader get the impression that there are no disadvantages in having standing trees in the yard, I must point out that some of those interviewed expressed these objections:

- **Trees may interfere with overhead utility lines.**
- **They may interfere with operation of septic tanks and sewer line.**
- **Large roots sometimes crack building foundations and sidewalks.**
- **Falling leaves, needles, and cones constitute a problem particularly when the swimming pools are left uncovered.**
- **They increase fungus growth and discolor tile roofs.**
- **There is some danger from falling trees and branches during severe wind storms.**
- **They require some maintenance and expense.**
- **A tree may become point of contention between neighbors if improperly located.**

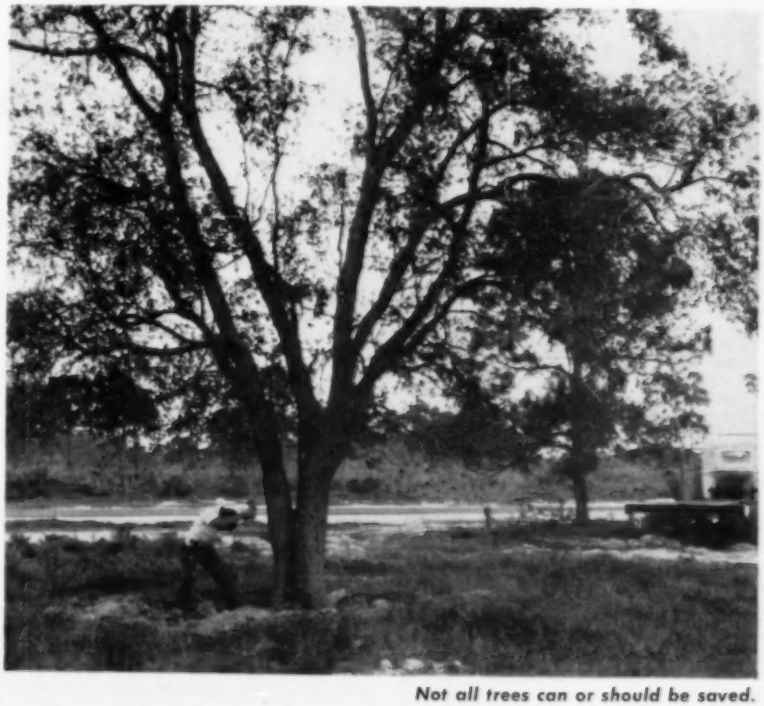
Even though most persons admitted that the trees had these disadvantages in varying degrees, 77% interviewed stated that the benefits far outweighed any disadvantages.

The Findings

The investigation revealed the following general conclusions:

- **The preservation of trees in a new subdivision depends on the type of tree and local conditions.**
- **Not all trees can be or should be saved; trees in roadways, where a house must be located, or in a low-lying or hilly area requiring fill or grading will have to be removed. Diseased, unhealthy, and unsightly trees should also be removed.**
- **The cost differential for site preparation with or without trees should be studied carefully before arbitrarily destroying the trees.**
- **Many potential home buyers do shop for a homesite with standing trees.**
- **Standing trees improve the living environment, encourage long-term residency and ownership, and contribute to the lasting economic value of the properties.**

Cities should act to encourage the preservation of standing trees in new subdivisions. In some areas of the country this can be done by law. In other areas, it might be more appropriate if cities would offer the developer some inducement which would encourage him voluntarily to save the trees. Perhaps in processing the subdivision application, it would be possible to return a certain portion of the filing fee on the basis of the number of standing trees preserved in the subdivision. ◄◄



Not all trees can or should be saved.

A utility workman installs the new 100-watt mercury luminaires on existing standards on State Street.

Five to Eight Footcandles Downtown

. . . or from double to treble the recommended standards brings new comfort, safety and interest in the business district in Albany, N. Y.

By **ERASTUS CORNING*** Mayor

The city administration of Albany, N. Y., capital of the Empire State, long has been aware of the value of good street lighting. In fact, lighting in the business districts has always at least equalled recommended standards.

But the growing trend toward establishment of well-lighted shopping centers in suburban and other outlying areas has emphasized the need for higher-than-standard levels of street illumination as one means of attracting shoppers to the downtown business establishments—providing for their greater comfort and safety and at the same time, taking advantage of the advertising benefits that good street lighting can provide.

As part of its continuing efforts to make the position of the city's businessmen as favorable as possible in these rapidly changing times, the city administration has taken a number of long-range and comprehensive

* Erastus Corning has deep roots in the city of Albany, New York, where he is rounding out his fifth consecutive term as the city's chief executive, this year. He was elected to the New York State Assembly in 1935, then to the State Senate in 1936, 1938, and 1940. Mayor Corning is president and treasurer of Albany Associates, Inc., insurance.

steps toward adoption of an over-all urban-renewal program.

While urban renewal can be a tremendous boost to the city's downtown, it cannot be done overnight. However, improved street lighting, figuratively speaking, can be done overnight, as was seen very vividly last December.

Because of their importance to the business community, two principal downtown thoroughfares—State Street and Pearl Street, North and South—were chosen by the city and business leaders for major street-lighting improvements. City officials then went into conference with lighting engineers of the Niagara Mohawk Power Corporation, our local electric utility, to develop a program and put it into action.

State Street First

State Street sweeps majestically up on a hill atop which stands the State Capitol. From its foot, where it intersects Broadway, paralleling the Hudson River, this downtown artery widens gradually from 76 feet to 104 feet at the point where it divides to pass the State Capitol building.

Cutting across State Street's middle, half-way up the hill, is Pearl Street, running north and south and, with State Street, comprising the main downtown shopping district of the city.

State Street was first relighted in December 1946, with 49 twin-light ornamental standards using two G.E. Form 79 A.D. luminaires and 15,000-lumen (860-watt) multiple lamps per pole, and a 30-foot mounting height. The brackets and luminaires were arranged in parallel position to the curb line. This lighting system provided a maintained average of 2.5 footcandles of illumination and State Street was, at the time, referred to as one of the best lighted business and traffic streets in the nation.

Buildings along State Street are principally banks, office buildings and hotels, containing ground floor shops of moderate size. There are no large department stores, as they are mainly located on North Pearl Street. The buildings are for the most part dark in color and the pavement is covered with a bituminous material.

The present lighting program has more than trebled the average illumination on the street. The former lighting was replaced in December 1960, wtih two G.E. 1,000-watt mercury luminaires on each existing street-light pole. It was necessary to replace the brackets which supported pendant luminaires with new twin brackets for the slip-fitter type of luminaires.

The new bracket was designed to increase the luminaire mounting height from a 30-foot light center to a 32-foot light center, with the luminaires placed parallel to the curb as before.

The new 1,000-watt color-improved mercury installation provides approximately 8 footcandles of average illumination. At the principal intersection—State and Pearl Streets—the illumination is 50% more than average.

North Pearl Street, from State Street to Clinton Avenue, a five-block section of the main downtown business area, was changed from sixty-two 15,000-lumen incandescent G.E. F-109 luminaires to sixty-two G.E. 700-watt color-improved mercury luminaires using existing aluminum standards. The mounting height of both the old and the new luminaires is 28 feet, 6 inches to center line of slip fitter.

This new lighting installation, completed December 15, 1960, provides average maintained illumination of slightly better than 5.0 footcandles.

Extending south on Pearl Street from the State and Pearl crossroads of downtown Albany, a strip of ten short blocks of business area formerly lighted with sixty-four 15,000-lumen incandescent, F-109 luminaires which were replaced early in December, 1960. The replacements consisted of sixty-four 400-watt color-improved mercury luminaires on existing ornamental steel standards.

Narrow Street

South Pearl Street's roadway, in this ten-block section, has a fairly narrow 24-foot width. The lighting poles provide a moderate 23-foot mounting height to the luminaire attachment.

This mounting height originally was provided in 1938 for use with 15,000-lumen lamps. In 1946, the previous luminaires were replaced with G.E. Form 109, using the 15,000-lumen (860-watt) group replacement multiple lamp.

Because both the street and the sidewalks in this area are narrow, it was thought advisable to continue using this modified mounting height for the luminaires.

Other important considerations were the projecting sign situation and the fact that buildings flanking the street generally are only two or three-story structures.

The new 400-watt mercury installation in this section provides approximately 3.5 footcandles of average illumination. Other light sources, such as store windows and signs, and the good level of street illumination, seem to offset any appreciable luminaire brightness that might otherwise result from the lower mounting height of the luminaires.

Citizen Support

The Albany Chamber of Commerce, the Downtown Merchants Association and Albany city officials, as well as the public, have expressed praise for and pride in the new light installations.

They agree that the modern, high-intensity "white-way" lighting for business streets should always be one of the first steps in any program of redevelopment or renewal of a community's business area. ◄◄

State Street shines out of the surrounding darkness. New York State's capitol buildings, unseen in the far background, will be similarly lighted later this year.

Keeping Saginaw Green

. . . with the use of a complete tree-planting and maintenance program pays beautiful dividends

By **EDWARD W. TABAKA**
Superintendent of Parks
Saginaw, Mich.

No tree program is complete unless it includes planting as well as trimming and removal. Too often, officials care only to cure complaints rather than to prevent problems by planting appropriate varieties which can live in peace and provide beauty and utility.

In Saginaw, property owners are responsible for the care and maintenance of street trees. The only exceptions occur on major and secondary streets where the city trims for visibility and storm damage, and on malls and other areas which do not abut private property.

Their characteristics make Augustine Ascending Elms ideal for mall plantings.

In the spring of 1953, we planted a series of malls on Court Street with Augustine Ascending Elms. The individual malls are 11 feet wide, of various lengths and extend for a distance of nearly a mile. We used 87 trees with an average spacing of 40 feet. These trees now average more than 25 feet in height. Since they have deep roots, they require only normal rainfall after planting. Their upright growth and restricted spread will lessen future maintenance. Although resistant to Dutch Elm Disease, they have received protective spraying regularly since the discovery of this blight here in 1955. Other malls contain a large number and many varieties of flowering crab. The height differential provides an interesting sight; it also eliminates much of the maintenance involved with shrub plantings.

Among the improvements required for the approval of new plats is the planting of street trees. We formerly accomplished this by requiring the subdivider to post a corporate surety bond in order to insure performance.

But considerable time often elapsed before the installation of pavement and sidewalks and since the subdivider could not plant street trees prior to these improvements, he often had to pay bond-renewal fees. To avoid this added expense on the part of subdividers and a considerable amount of checking on our part, the law now permits a subdivider to pay the city directly for such planting at the rate of $15 per tree in accordance with an approved plan, usually prepared by the Parks Division.

This service is also available to individual property owners. This arrangement has been in effect for about three years and results are encouraging, particularly on some of the older streets where we have interested residents of a given area in street-tree planting or replacement as a neighborhood project. In the first such area, the Parks Division contacted each property owner individually. We have since obtained better results if one or two individuals in the neighborhood can be sufficiently interested to make the personal contacts. This is particularly true in any area that has received a recent special assessment for some other public improvement. The Parks Division then meets with these people in an advisory capacity.

Since each individual shows particular interest in his own tree or trees, we prepare an accurate planting plan before the meeting. We recommend two or three varieties of trees and explain the merits of each. While the Parks Division makes the final decision based on the preference of the majority, those involved have a feeling of pride in the participation and accomplishment.

Many considerations govern the choice of tree varieties. These include overhead wires, width of available area, street width, soil conditions, and others. Thus far we have successfully used Little Leaf Linden (*Tilia cordata*), Sugar Maple (*Acer saccharum*), Norway Maple (*Acer platanoides*), Paul's Scarlet Hawthorn (*Crataegus oxyacantha Pauli*), Gerling Maple (*Acer rubrum Gerling*), Tilford Maple (*Acer rubrum Tilford*), Red Maple (*Acer rubrum*) and Augustine Ascending Elm. The intelligent selection of these trees creates beauty and shade rather than problems for our residents. ◄◄

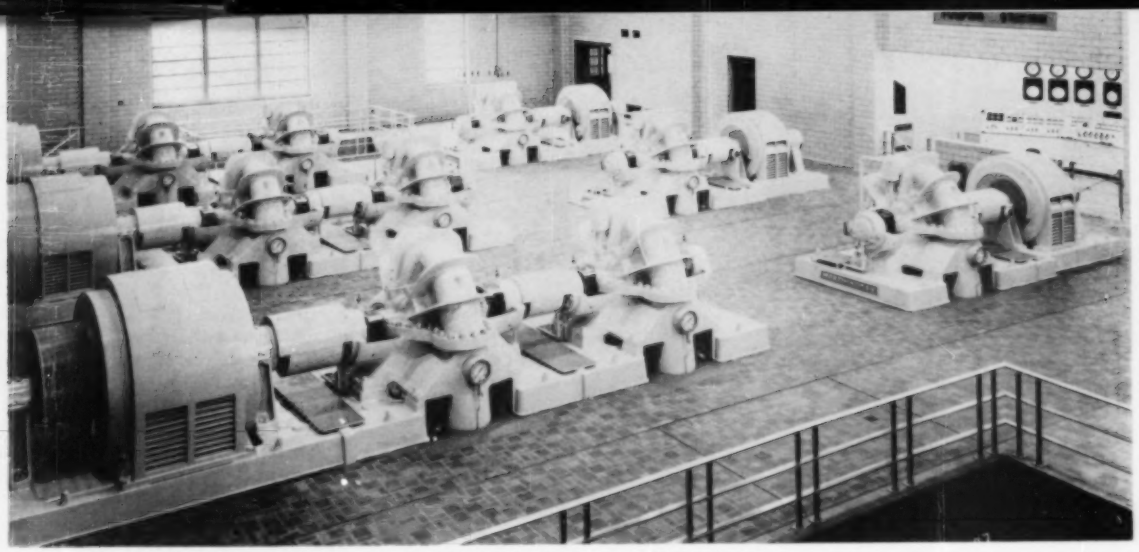


Fig. 1. Cincinnati's Tennyson Station employs both single-stage and two-stage horizontal split-casing pumps to serve two pressure zones.

How to Select and Install Water-Works Pumps

Part III—Typical installations describing the use of various types of dry-pit pumps

By **IGOR J. KARASSIK** and **CHARLES J. TULLO***

Within the past 12 years the City of Cincinnati, Ohio, modernized existing pumping stations and constructed the Tennyson Pumping Station (Figure 1). This station houses six complete pumping units for two different pressure services. Three units are Worthington 20-inch LCS single-stage, double-suction, horizontally-split-casing volute pumps for the central-service system. The remaining three are two-stage series units, each made up of two 20-inch LCS double-suction single-stage pumps, for the high-pressure service. Series piping connects the two single-stage pumps of each unit to develop the pressure demand of the system.

The six pumping units, driven by General Electric motors, require a total of 12,250 horsepower. Table I shows the rated pump capacity, head and speed of the units.

The pumps have special bottom-suction and bottom-discharge cast-iron casings, horizontally split for ease of maintenance. Normally known as standard fitted construction, they are equipped with bronze impellers, wearing rings and shaft sleeves. The anti-friction, spherical-roller-type bearings have an independent oiling system for lubrication. The outboard bearing, a combination thrust and radial-load bearing, supports the radial load of the rotor as well as any unbalanced hydraulic axial thrust from the impeller. The somewhat special oil-lubrication system was supplied at the request of the city engineers. Generally, manufacturers furnish this type of pump with standard means of lubrication,

* Mr. Karassik is a consulting engineer and manager of planning, and Mr. Tullo a consulting engineer, for the Harrison Division of the Worthington Corporation.

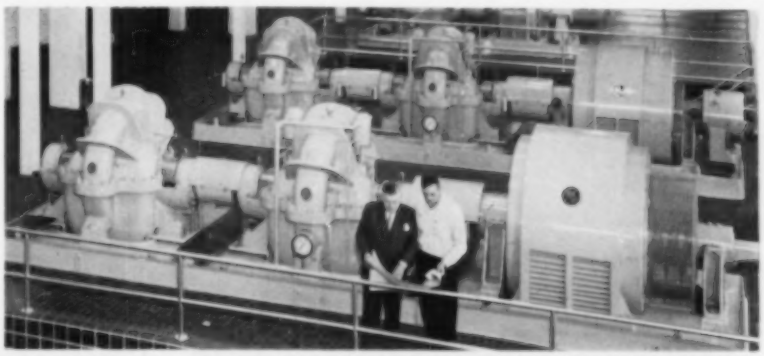


Fig. 2. Utilization of the same type of pumps in the Main Pumping Station as in the Tennyson Station has the advantage of complete interchangeability of parts.

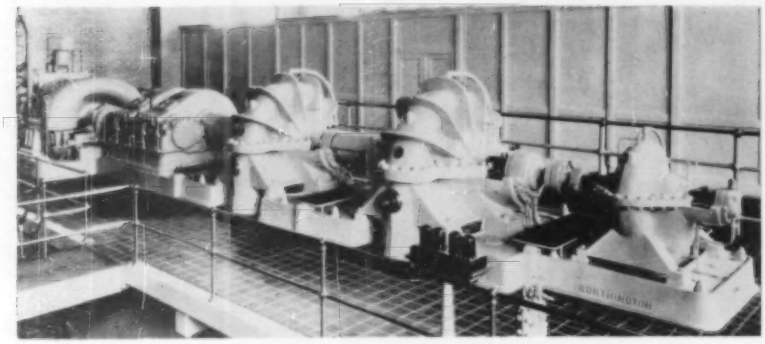


Fig. 3. After 30 years of service with a steam turbine as the prime mover, this two-stage pump was changed over to an electric motor driven unit.

either grease or oil, of the self-contained type.

Cincinnati also completely modernized its Main Pumping Station. Originally, this station housed several Worthington Snow-Holley pumping engines but now contains two single-stage and three two-stage (series units) double-suction horizontal 20-inch LCS-4 pumping units on services similar to those in the Tennyson Pumping Station (Figure 2). General Electric 720-rpm synchronous motors, ranging in horsepower from 1,250 to 3,000, drive the pumps. Pump construction is the same as for the Tennyson Station pumps, thereby providing complete interchangeability of parts—always a desirable feature.

One of these three sets of two-stage series pumps, originally installed in 1933, was steam turbine-driven, designed to deliver 25 mgd against a head of 470 feet (Figure 3). The smaller double-suction single-stage pump connected to the series unit at the right of the photograph provides circulating water to the condenser serving the 2,500-hp turbine. The 1952-54 Main Pumping Station modernization program included elimination of the old steam plant and conversion of this series unit to motor drive. The change of drivers took place after these pumps had given almost 30 years of continuous service as a turbine gear-driven unit.

The Colbrook Pumping Station, in Grand Rapids, Mich. (Figure 4), contains one 14-inch, two 16-inch and two 18-inch single-stage, double-suction horizontal pumps. The individual small pipe lines coming from the top of each pump casing lead to a centralized priming system.

Vertical Units

Like many other localities, the District of Columbia had to expand its water-supply facilities by modernizing old pumping stations and adding new ones. The new Dalecarlia Pumping Station houses 15 motor-driven, vertical single-stage, single-suction dry-pit centrifugal-volute pumps on four different pressure services (Figure 5). These short-coupled units, with the motors mounted directly on the pumps, eliminated the need for a separate floor to mount the motors and resulted in considerably lower building costs. The engineers in charge of this work are to be congratulated on their foresight and well-conceived plan. Undoubtedly a considerable amount of preliminary study

Table I

Pump Data, Tennyson Pumping Station
Cincinnati, Ohio

No. of Pumps	Rated Capacity in mgd	Rated Head in feet	Speed rpm	Motor hp
3	25	200	720	1250
2	25	500	720	3000
1	22	500	714	2500

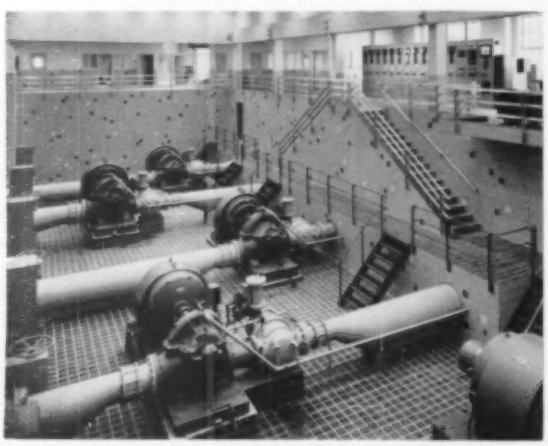


Fig. 4. A centralized priming system serves the five pumps in Grand Rapids (Mich.) Colbrook Station.

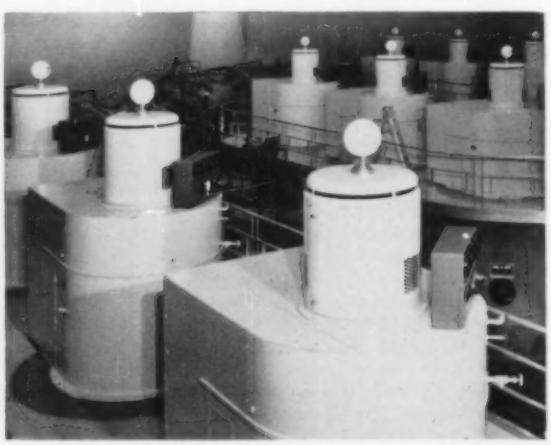


Fig. 5. Close coupled, vertical single-stage pumps supply water to four pressure systems in Washington, D. C.

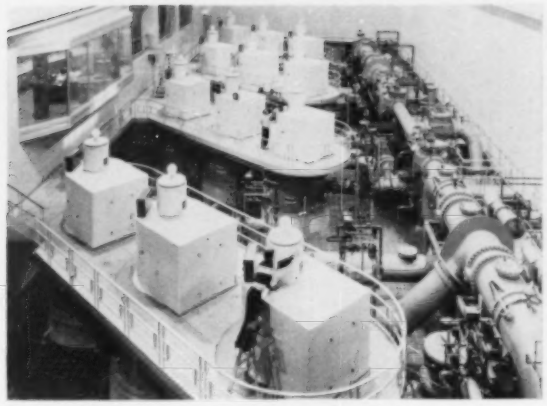


Fig. 6. Careful planning as to pump selection and layout resulted in lower building costs at Washington's Dalecarlia Station.

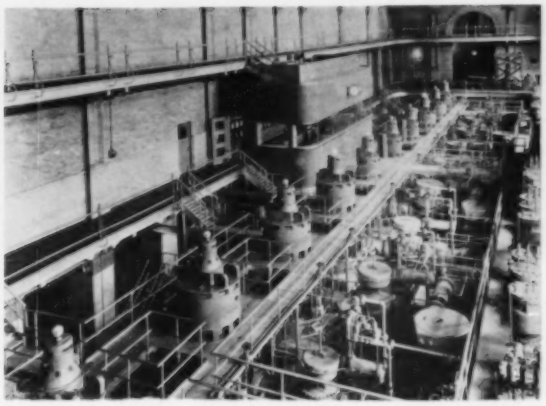


Fig. 7. The building is old, but the ten pumps are relatively new. These close-coupled units serve four pressure zones from Bryant Street Station in Washington, D. C.

went into the plan before actual work started.

In our opinion, the pump arrangement (Figure 6) at the new Dalecarlia Pumping Station effected a considerable saving in overall costs for this type of water-works installation. The pumps are single-suction, bottom-inlet-type units, a design normally used for vertical-shaft pumps.

A rigid coupling connects the pumps and motor shafts of these units, which are supported by three bearings: one immediately above the pump casing and two motor bearings.

Bearings

All bearings are of the removable-sleeve type, babbit-lined and oil-lubricated. The combined thrust and radial-load-type upper motor bearing supports the complete rotor plus any unbalanced hydraulic thrust.

Table II gives the service, capacity, head, speed and motor horsepower of the fifteen Worthington pumps serving the Dalecarlia Station.

Figure 7 shows a battery of ten Worthington short-coupled vertical dry-pit single-stage pumping units at the Bryant Street Pumping Station in Washington, D. C., another modernization project. As in the case of the Dalecarlia Station, the equipment serves four different services, as outlined in Table III.

The few installations presented here show that every water-works-supply facility presents problems of its own and requires individual analysis and an individual solution. Fortunately, this does not necessarily mean that each installation requires the design of special pumping equipment, as such a situation would impose a tremendous financial burden on the purchaser. The major pump manufacturers have developed lines of more or less standard equipment which can be modified and adapted to suit almost any given situation.

Regardless of the type of pump finally selected, be it horizontal or vertical, dry-pit or wet-pit, good mechanical and hydraulic operation of the equipment can best be obtained through a high degree of cooperation between the water-works plant designers and the equipment manufacturers. This cooperation is necessary in the selection of the pump type, drivers and related equipment; in the design of the pumping-unit support structures; in the planning of the fluid channels and in the layout of the suction and discharge approaches. Many manufacturers possess an abundance of knowledge and experience in these matters and plant designers should avail themselves of this knowledge and experience by requesting assistance and comments in the preliminary stages of planning, which is the most opportune time on any job.

Competition between many manufacturers assures constant growth in technology and improved designs and equipment. However, purchasers and users of water-works equipment should make certain, when selecting a supplier, that they are assured of all the benefits that a long-range investment deserves. ◄◄

Table II

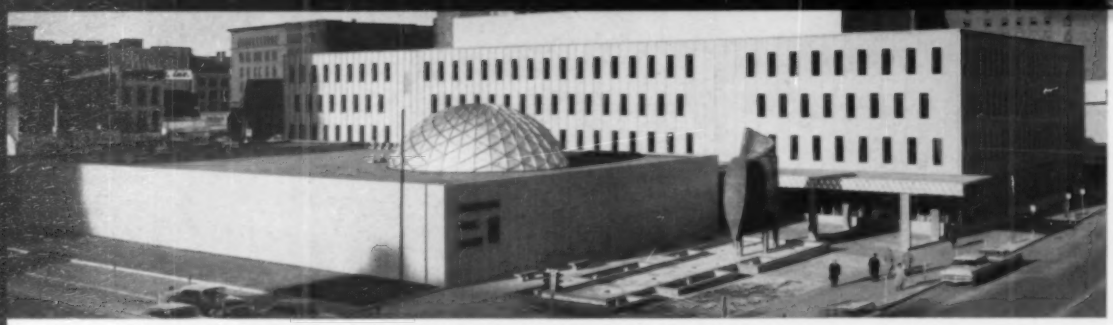
Pump Data, Dalecarlia Station Washington, D. C.

Service	Number of Pumps	Rated Capacity in mgd	Rated Head in feet	Speed rpm	Motor hp
Low Service	3	50	50	514	500
1st High Service	3	35	145	600	1000
2nd High Service	3	20	220	900	900
3rd High Service	6	27	300	900	1750

Table III

Pump Data, Bryant Street Station Washington, D. C.

Service	Rated Capacity in mgd	Rated Head in feet	Speed rpm	Motor hp
Low	35	45	514	325
1st High	35	110	514	800
2nd High	25	210	720	1100
3rd High	15	310	900	1000



Minneapolis' new public library and adjoining planetarium wing which opened this spring initiated a $70,000,000 downtown-redevelopment program.

Typical of the new luxurious rooms, this lounge features magazines, books and color TV set for employees' relaxation.

Card-index reference files are readily available. The vertical grill returns air to the penthouse plenum where it is electrically cleaned and recirculated.

Minneapolis' New Library

. . . initiates a redevelopment program in the downtown area

This spring signalled the start of a $70,000,000 downtown-redevelopment program and the end of outmoded library facilities in Minneapolis, Minn.

A gleaming $8,000,000 glass, gold and granite public library has replaced a high-ceiling Victorian structure which was overcrowded within a decade after it opened 70 years ago. The new building contains space for 2,000,000 books and 800 patrons, plus card catalogs, reading areas, meeting rooms, city and county library offices and an employee lounge and cafeteria.

Attached to the new four-story library is a new, squat single-story wing housing a 200-seat planetarium, a 450-seat auditorium, a natural-science museum, display areas, workshops and equipment rooms. The two buildings connected by an arcade, open onto two main streets.

Moving stairways connect the first two floors of the library section. On the glass-walled first floor are the history, business and municipal departments, plus an information desk. The return and checkout desks are located near the main entrance.

The immense, open-shelf space in the new building has revolutionized the library's book-handling philosophy. Almost all books were squirreled away in stacks far away from the readers in the old library because of limited open-shelf space. Now thousands of books are on display so that patrons can make their own selections.

A pneumatic communication system and an automatic conveyor made by Standard Conveyor have updated the old process of having pages scurry back and forth to the stacks for books. Now, a librarian merely fills out a request card, puts it in a capsule and pops the capsule into a pneumatic tube going to a particular stack area. There a page finds the book, puts it in a plastic basket and places the basket on one of two vertical conveyors which connect stacks and departments on every floor.

Both the library and the planetarium building are completely air conditioned, for, as Librarian Raymond Wilson points out, people expect the same comfort in public buildings as they get in department stores. All mechanical equipment for the air-conditioned library is in a penthouse on the fourth-floor roof, freeing the basement levels for additional stack space, shops, garage and workrooms.

Conventional air conditioning solved the heat and humidity problem but could do little about the dust and dirt of downtown Minneapolis. Installation of Minneapolis-Honeywell electronic air cleaners on every air-handling system relieved this dirt problem.

The electronic air cleaner also sieves out airborne fungus spores, chemical bits, dirt and other submicron particles that have a particularly deleterious effect on book covers, bindings and pages. This, with close humidity control, should reduce book damage to a minimum.

The planetarium wing has a separate but similar air conditioning system. Eight air-handling systems, also equipped with Honeywell electric air cleaners, supply 30 zones in the auditorium, planetarium, galleries, museum and other areas. Chilled water comes from the library penthouse compressor; hot water from a separate boiler in the basement. ◄◄

Fleet Buyer's Guide

New Car Facts and Figures for 1962

FLEET BUYER'S GUIDE gives you 12 pages of facts and figures for guidance in selecting the type of car best suited to your fleet operation. It has information on the new service-saving features offered by some cars. It shows you how to make the most of important new engineering and marketing developments and how, for the first time, you can find exactly the type of fleet car you want from varieties and combinations never before offered. It weighs economy factors (such as initial cost, upkeep and resale value) against type-of-job factors (purpose of car, prestige, and so forth), to help you arrive at a fleet purchase tailored exactly to your requirements and best interests.

The background of today's changing automotive market

At the end of every model-year, fleet buyers start to look over the crop of new cars to find the vehicle or combination of vehicles which will best suit their automotive needs. This year the selection is wider than ever before. There will be more compacts with even more economy to offer; there will be new full-size cars, with features now *established* as money-makers for fleets; there will be a new dark-horse "kind" of car you will want to think about for fleet use. Never have there been so many models—so many shapes and sizes. Never so many cars with so many close relatives.

To the man on the street, approached on every side to take notice of particular makes and models, this world full of cars can understandably be a confusing one. Usually he's not that sure of his own exact needs.

But to the fleet buyer who knows precisely what his business car requirements are, such a large selection of vehicles becomes an opportunity without precedent to buy without compromise; to buy *just* the qualities he needs—without being forced to include some he can't use but has to pay for just the same!

One reason why manufacturers are offering so many different cars in 1962 is, of course, that the public has indicated to the manufacturers that they want a larger choice. There will be more than 400 models to choose from, a rise of about seventy-five over the 1961 offerings.

In 1962 compact cars are expected to continue their vigorous growth. Of particular interest to fleets will be the new wagons in the compact field —like the new Falcon Deluxe Club Wagon with *twice* the cargo carrying capacity of today's full-size wagons . . . and the new "sophisticated" compact wagon, the Falcon Squire with remarkable prestige appeal. In 1961 the compacts accounted for 35.2% of total production of cars in this country and about 25% of all fleet sales.

And this year there will be a new entry in the automotive derby — a new breed of car, a car apart, a car which offers the best of several car types. This distinctly different automobile promises much for the fleet operator as well as the consumer. Such a vehicle is the 1962 Ford Fairlane. It will be covered later in the GUIDE.

From the foregoing it is obvious that the passenger car market is no longer viewed by the automobile manufacturers principally as a mass market for all-purpose vehicles. Surest evidence of this is that whereas a car dealership ten years ago was a specialty shop—today, in its offerings of luxury, economy and all-purpose utility, in all sizes, your dealer has become an automotive supermarket! For example, your local Ford Dealer will be offering a new high of 33 different models in 1962.

Let's look at some of the factors to consider in helping you to make the soundest possible decision for your business car requirements.

How to select the right car for your fleet

Every fleet car you consider this year will represent a combination of qualities. Matching these qualities to your needs and weighing the degree to which you find them in each make of car is the essence of a sound fleet purchase. Here are seven points to consider when making your next fleet decision:

1. Cars should "keep producing." They should be on the road, not in the shop . . . auto absenteeism is wasteful, expensive. Fleet operators should learn which cars have self-maintenance features designed into them – benefits, such as extended lubrication and oil change intervals, self-adjusting brakes and rust-protected underparts.

2. Cars should help build your organization's image. This is especially important where prestige is a prime requisite in your organization's existence and development. A company is judged to a surprising extent by the "cars it keeps." If economy is as important as a quality impression, the new "*intermediate*" car now qualifies for consideration.

3. Today's compacts are best for certain purposes. Where economy is the prime consideration, a good compact is the answer. This is especially true for multipurpose use involving such tasks as—city sales calls or short trips not requiring heavy loads.

4. For specialized jobs, pick the right car. And there *is* a particular car especially suitable for your particular job. Selecting it depends on such factors as whether your load requirements are unusual, whether high power is desirable, whether luxury or economy are primary or secondary considerations, and whether yours is a local or cross-country operation. So, know your job requirements!

5. "Fringe benefits" should not be overlooked. Driver-salesmen and executives, for example, find the *prestige* factor rewarding for individual *and* organization in personal driving on weekends or evenings. It's good "company psychology" to consider the desires and needs of the individual who will be driving the car, whether off-duty or on-the-job.

6. Resale is important. Consider the features designed into the car you want. Some cars have been designed with features built right into them which will contribute greatly to the maximum return on your investment at resale time.

7. Check the dealer, too. Does he have adequate facilities to properly and efficiently service your cars? Is he convenient? Is he reliable? Talk to some of his customers. Will he be helpful with financing at fair rates? Always remember, a good dealer is a big part of a good deal.

When economy comes first... the compact car looks best

The compact car is the pace-setter of fleet operation where economy is most important.

Let's examine, more specifically, just how the compact fleet dollar does go further:

Initial cost of the compact gives it an edge of between $200 to $300 below initial cost of a standard-size car of the same make. But individual car prices must be carefully checked, as some "compact" cars actually cost more than many full-size cars.

Operating costs, particularly gasoline expenditures, are decidedly lower. On the average the compacts get better gasoline mileage than the bigger cars. A Ford Falcon, for example, with standard shift, driven by an expert obtained 32.6 miles per gallon under the cross-country test conditions of the 1961 Mobilgas Economy Run—the *highest* gas mileage ever recorded by a 6- or 8-cylinder car in the history of the Run.

Leading fleet operators report that the average operating savings per car is $130 a year when a fleet is switched from middle-line standards of the Big Three to their compact counterparts.

In a comprehensive study of all operating expenses — fuel, oil, maintenance, tires, depreciation, insurance, licenses and taxes—compact car fleets averaged more than a half-cent a mile less than fleets of standard-size vehicles.

Depreciation rates currently favor the compacts over their big brothers, too, on a dollar basis. Both dealer and fleet operator have been surprised by the consistently high resale value of the compacts. Some makes, however, score higher than others. A point to check carefully!

All in all, the compact car has proved to be the answer for fleet operators where greater economies in operation is of major concern.

Each of the individual compact car makes should be carefully considered on its individual merits with regard to luggage capacity, price, maintenance, and over-all economy — prior to making your final fleet selections.

1962 FALCON

The car that makes a business of savings can make savings in your business!

Top gas economy, low, low prices and a wider choice of models make the '62 Falcon the best shape economy's ever been in!

When fleet buyers ask the "why" of Falcon's fabulous success, the answer comes back quick and to the point. Falcon is the compact that makes the most sense to the most people . . . for the most reasons.

Falcon is the Economy Champ! Under the hood there's an improved version of the famous Falcon Six engine that proved its economy in 1961 by recording the best gas mileage for a 6- or 8-cylinder car in the 25-year history of the Mobilgas Economy Run!

A Falcon Fleet has less upkeep! A 1962 Falcon will go 30,000 miles or 2 years between change of engine coolant-antifreeze . . . 6,000 miles between oil changes, and (in most states) even license and insurance rates are lower.

Falcon is worth more at resale time. Falcon's resale figures have astounded even its most ardent supporters. Falcon's popularity makes your investment pay off!

Falcon has the most models. There are 13 different Falcon models to choose from—two- and four-door sedans, roomy station wagons (including a snappy, new Falcon Squire with elegant woodlike trim on its steel side panels) and new Club Wagons which can carry twice as much as regular full-size station wagons.

—and 1962 adds 62 MORE reasons. Even though it was hard to improve on Falcon, Ford engineers went over the entire car with a fine-tooth comb, checking, changing, perfecting—increasing sound insulation . . . designing a new cantilever-type engine-transmission mount to reduce noise and vibration . . . adding an orifice to the wheel cylinder for quieter braking . . . putting sound absorber in the driveshaft . . . redesigning the rear axle ring and pinion gear teeth for quieter gear operation . . . even hushing up generator brushes for more quiet! For greater durability they put in heavier shock absorber reinforcement . . . a larger size differential gear . . . improved front suspension ball joint seals for reduced ball joint wear and a die cast aluminum front engine cover for more positive oil sealing. These and a host of other features make Falcon in 1962 still America's greatest compact car value.

Full-size fleet cars... for what job and why they can be your best buy

The full-size fleet automobile has a number of unique and important advantages.

It naturally provides more interior room for comfort on long trips and greater carrying capacity for demanding assignments.

It is more impressive to the eye—and with more luxurious appointments inside and out it carries more prestige with it wherever it goes. Combined with more power and performance and the larger range of power assists, this is an automobile which actually works for an organization 24 hours a day. To the employee or executive who drives it on the job and may have use of it over weekends—and to the company he represents, the full-size car offers substantial prestige value.

The greater weight and wider "tread" of the full-size car make it more practical for off-the-road work where rough going is routine, as in construction work, the oil industry, mining, agriculture. It rides better, stands up better.

Superior riding qualities and safety factors also make the "big" car the preference when the job calls for extended trips at turnpike speeds—and driver fatigue is a hazard.

The *full-size* car has demonstrated high resale value, as it generally represents superior built-in quality. Therefore, when these cars come to the used car market they are less apt to show the tell-tale marks of excessive wear.

Some full-size cars like the 1962 Ford Galaxies—containing *all* the latest service-saving features—will essentially help take care of themselves. These cars cut maintenance costs with such features as self-adjusting brakes, greater intervals between lubrications of major chassis components (suspension, steering linkage, front wheel bearings and universal joints), extended periods between oil changes and change of engine coolant-antifreeze. They also resist wear because vital body parts are protected to resist rust and corrosion and the exterior finish will retain its brilliance and lustre indefinitely.

If you feel the need for a certain amount of added prestige, but have hesitated buying a full-size car because of the higher initial cost, check the maintenance saving features some of them have. Add up the savings these features represent over a one- to two-year period. The savings in maintenance may offset the higher initial cost. Sound unbelievable? Check each car—add up the maintenance savings one particular make in 1962 can give you. You'll become a believer.

Traditionally, the full-size car has been the predominant vehicle in fleet usage. With some of them having new features this year they will continue to merit serious consideration.

Galaxie & Galaxie / 500

5 billion miles prove a Galaxie is built to be more service-free—and keep its fine-car quality

Every fleet dollar buys more luxury this year in the full-size car with all the proven service-saving features.

1962's best full-size buys. With the introduction of two distinguished new Galaxie Series, Ford offers true luxury cars in every respect but price. Now it is pointless to pay more for the finest—or settle for less. And fleet owners can afford to extend the prestige "fringe benefits" of the Galaxie to more positions in the company.

Galaxie's twice-a-year maintenance is the big fleet news in 1962. These are the cars that reduce service to a minimum—30,000 miles on many items, only twice a year or 6,000 miles on the rest. Last year, Ford introduced a revolutionary concept, designed to banish frequent and costly maintenance to a degree that even many of the costliest cars can't match. Today, one year and 5 million owner-driven miles later, the validity of these engineering principles has been proved.

Routine servicing of the Galaxie has been reduced to 30,000 miles between major lubrications, 6,000 miles between oil changes and minor lubrications, two years, or 30,000 miles, without changing engine coolant-antifreeze. Brakes adjust automatically (one fleet operator estimated this brake feature alone saved him $30,000 last year!). Special processing protects vital body parts against rust and corrosion . . . front fenders bolt on . . . and the Diamond Lustre Enamel is super-hard, maintains its showroom beauty indefinitely. With Galaxie in 1962 fleet owners benefit from both prestige and proven maintenance economy.

Enduring elegance . . . with the power to please. Five V-8 engine options make driving, which was once just part of the job, a very special pleasure with Galaxie. Performance and traveling are in the class of the very costliest cars. Everything in Galaxie is built to work quietly. Its silence whispers quality. The businessman who travels behind the wheel of a Galaxie goes everywhere in comfort . . . and arrives in style. He and his Galaxie are both a credit to the organization they represent.

Galaxie by Ford

Promising broad fleet application:

New "first of its kind" car combines features of both compacts and full-size cars

In 1961 the fleet buyer was faced with choosing from two basic size groups, compact or full-size.

Either size group forced the car buyer to compromise on important buying motivations. The full-size car forced the buyer to compromise on *initial cost*, *gasoline economy*, and *easy handling*. By contrast, the compact-size car forced compromise on *interior size*, *performance*, and *riding comfort*.

For a year now you have been reading about new-size cars coming out for 1962. In general, these new kinds of cars were designed to offer the carrying capacity and interior room of full-size cars with substantially smaller exterior size and lighter weight . . . increased luxury and performance at close-to-compact prices. Some were designed to bring you a new combination of more power *and* more economy with new lighter engines built by new methods . . . and all the luxury car service-saving features at compact-class prices.

Though they *all* seem to be designed for the same reason, some missed the mark. Look them all over carefully. You be the judge and ask yourself these questions (it will take a little extra time but as a fleet buyer it is time you should take): Check the size—is it actually larger than a compact car? Check the power—will it provide the desired economy with adequate performance? Is it truly the best value in size, performance, economy, maneuverability and price to meet your fleet requirements? It will pay to look each make over carefully and compare what each offers.

When a new type of fleet car arrives which comes this close to being the ideal, it deserves extremely close and critical examination. Make sure the make you choose has . . . the *best* of the new!

Just right for just about every fleet...

1962 Ford Fairlane 500

Here's America's newest car . . . the right size . . . the right price . . . right between Galaxie and Falcon.

RIGHT SIZE!

On the outside, the Fairlane 500 is trimmer, with one foot less to park. On the inside, the new Fairlane is roomier than most cars on the road today. A completely new, unitized body gives you all the space you want on the inside and eliminates bulk on the outside.

RIGHT PRICE!

The Fairlane 500 is priced well below Fords which used to bear its name. It is priced under any other full-size car in America—and under many compacts. Yet Fairlane comes complete with every important luxury you expect to find in a full-size fine car.

TWO NEW ECONOMY ENGINES.

Roomy as the new Fairlane is, fleet operators will be glad to hear it delivers greater gasoline economy than any full-size car in your fleet today. Compared with last year's Fairlane, this year's Fairlane Six averages 25% more mileage on every gallon of gas. Many compacts would envy its mileage figures. The world's first economy Eight also plays a leading role in Fairlane's economy story. Developed exclusively for the new Fairlane, this new Challenger V-8 combines crisp, eager performance with thrift, durability and light weight—product of a new foundry process pioneered by Ford, world's largest maker of V-8's.

SERVICE-SAVING FEATURES THAT WILL SAVE YOU MONEY.

Fairlane 500 takes full advantage of the Galaxie's 5-billion-mile experience in important, service-free features. The all-new Fairlane will go 30,000 miles between major lubrications, 30,000 miles, or two years, without coolant-antifreeze change, 6,000 miles between oil changes . . . and 6,000 miles or 6 months between most other routine service stops. This means Fairlane stays on the road—and out of the shop! Like Galaxie, too, the Fairlane's brakes adjust themselves, and its Diamond Lustre Enamel never needs waxing—simply wash and, if necessary, remove any corrosive substance with a good grade of polish.

FORD FAIRLANE 500

Even after you've purchased the "best buy" car for your company...

The way your fleet is operated can cut maintenance costs ...before they begin!

Tip off your drivers on ways to save. Employee-drivers who don't know the facts of economical operation can't be expected to practice them. Why not give each a check list?

What every good driver should know about gas mileage. He should understand that the way he drives can make a great difference in fuel consumption. The "cowboy" who races his engine at stop lights and drives raggedly on highways, for example, may use 40% more gas than the economical driver. With the following, any needless waste will be eliminated:

Maintain steady speeds. If you don't keep an even speed you're using fuel without the most efficient use of the power it generates. Repeated spurts and slowdowns are wasteful.

Go easy on the "green." Jack-rabbit starts on the green light waste gallons of gasoline by excessive throttle opening and holding automatic transmissions in low gear too long. So much acceleration is usually unnecessary.

Keep tires inflated. Soft tires increase resistance to forward motion — mean you're always "pushing uphill." They literally soak up power.

A cold engine wastes fuel. Check thermostat and cooling system if the gauge doesn't normally register about halfway between C and H. A cold-running engine wastes fuel. So does racing the engine for a quick warm-up on a cold morning. Most economical warm-up is to drive the car for a short distance at low speed.

Check the oil. Proper lubrication of engine, differential and automatic transmission keeps internal friction to a minimum.

Too much friction anywhere soaks up power. New special sealed lubrication systems in cars like Fairlane and Galaxie let you go two years or 30,000 miles between chassis lubrications. Lower friction, too, by maintaining proper wheel alignment. And watch wind resistance—even that of open windows — at highway speeds.

A final, BIG way you can save. Make sure the make of car you are considering is designed with maintenance economy in mind. You have just read how some of the new 1962 fleet cars adjust their own brakes, require chassis lubrication and changing coolant-antifreeze only every 30,000 miles, and engine oil not until 6,000 miles! They have self-adjusting brakes, vital body parts protected from rust and corrosion, and fully aluminized mufflers. Such cars work for you 24 hours a day . . . keeping costs down and efficiency up!

The best single way to protect your fleet investment

. . . is to look into the resale value being built right into fleet automobiles these days.

It works for you around the clock, as surely as a well-briefed driver-salesman. Ford's maintenance saving features will mean real savings to you and are well worth learning about.

Tops for resale, of course, are "Creampuffs" or cars which have had such extraordinary care they look, run, and feel like new. They command top resale prices—way over the average figures listed in official used car buying guides. Dealers and wholesalers alike will allow far more on a "creampuff" or "sharp car" because it promises quick turnover without the risk of expensive reconditioning.

One sure way, then, to save money on new car purchases is to look ahead and preserve or enhance the value of your present cars. If you're in the market for new cars, think about resale. Think about public acceptance of the make. Think about *keeping* those cars in "high resale" condition.

For years Ford has been studying this entire problem. And the record shows that Ford took it upon itself to assume a leading role in maintaining high resale value.

In the fall of 1960 the Ford Motor Company startled the automotive world by extending the new car warranty* on all of its products to a full year or 12,000 miles . . . dramatic proof of advances on three fronts—

Finest Quality . . . Greatest Durability . . . Reliability of Operation. Obviously these are vital to high resale value, as well as low-cost operation. And in the 1962 cars Ford engineers have *continued* to build in high resale factors—both in first quality and operational care.

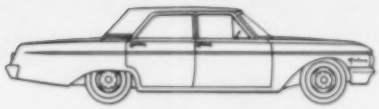
First, they took 71 separate steps to improve the quality in the cars. The 1962 Fords are exceptionally quiet. For example, the doors shut solidly but silently thanks to special sound-softening latch plastics. The cars run silently, too—with improved insulation and retuned frame. Ford *quality control standards are setting a new standard in the industry.* Component materials have been chosen for longer life as well as beauty. In the interiors, for example, where wear and tear shows up earliest on any car, additional nylon increases the life of the carpeting; the rubber floor mats resist wear with a hard vinyl coating, and interior side panels of new materials will resist chipping, peeling or warping under varying atmospheric conditions.

Second, Ford helps you keep resale value high by bringing you cars in 1962 with 5 billion miles of proof they're beautifully built to be more service-free. Routine service has been reduced to 30,000 miles on certain important items—to 6 months or 6,000 miles on the rest. Brakes adjust themselves. Vital body parts are protected against rust and corrosion. All this, of course, is also important to the *second* owner of a 1962 Ford!

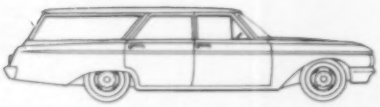
Already acknowledged as a leader in public acceptance of its fine cars, Ford in 1962 takes a giant step forward with cars that will actually help keep themselves in "creampuff condition" for highest resale value, while lowering your maintenance costs as you drive them!

*Extended Warranty—Each part of '62 Fords, except tires, is dealer warranted against defects in materials or workmanship for 12 months or 12,000 miles, whichever comes first. Owners remain responsible for normal maintenance service and routine replacement of maintenance items such as filters and ignition parts.

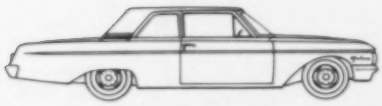
Whatever you're looking for in a fleet car...



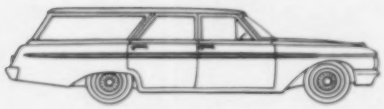
Galaxie Town Sedan



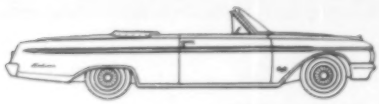
Fordor Ranch Wagon



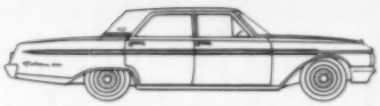
Galaxie Club Sedan



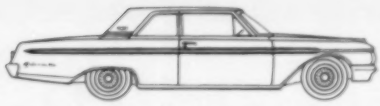
9-Passenger Country Sedan



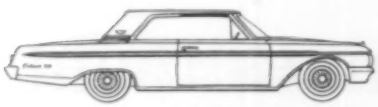
Galaxie/500 Sunliner



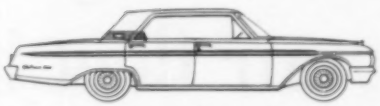
Galaxie/500 Town Sedan



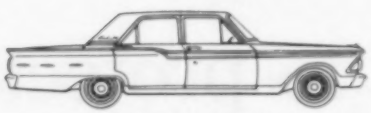
Galaxie/500 Club Sedan



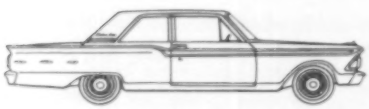
Galaxie/500 Club Victoria



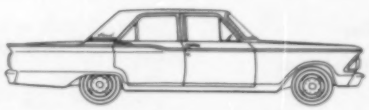
Galaxie/500 Town Victoria



Fairlane 500 Town Sedan

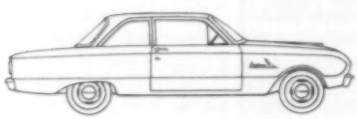


Fairlane 500 Club Sedan

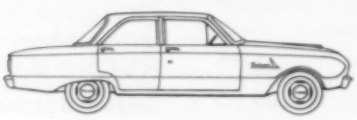


Fairlane Town Sedan

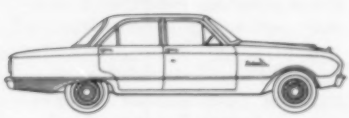
Fairlane Club Sedan



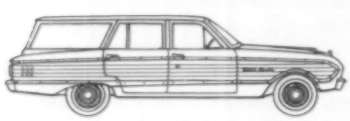
Falcon Tudor Sedan



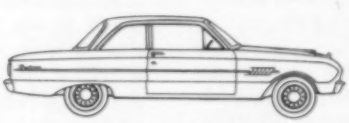
Falcon Fordor Sedan



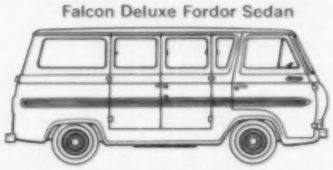
Falcon Deluxe Fordor Sedan



Falcon Squire Wagon (4-door, 6-pass.)



Falcon Futura (2-door, 5-pass.)



Falcon Deluxe Club Wagon (8-pass.)

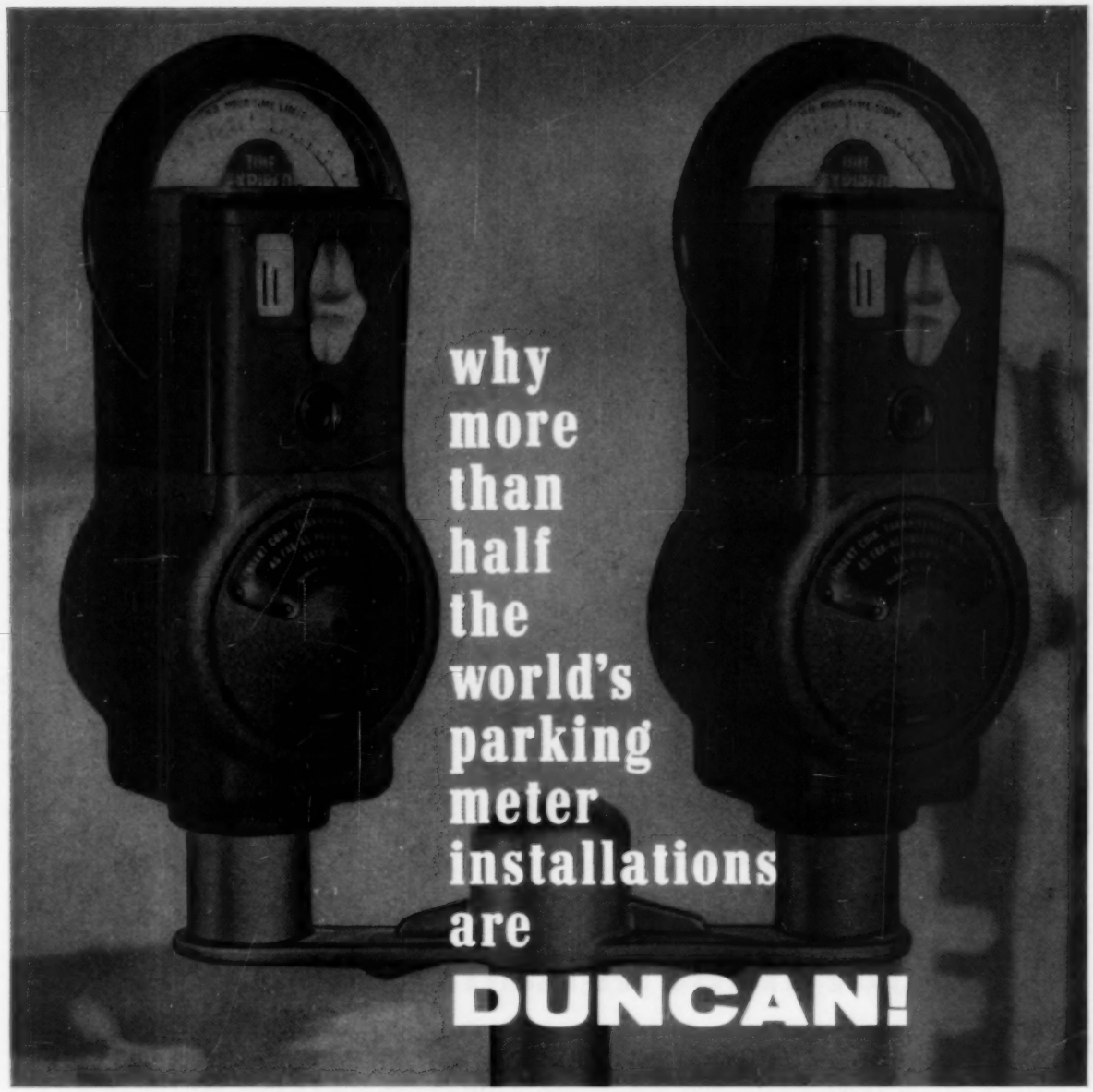
Look to the long Ford line!

Here on this page are 19 of the 33 glistening, new 1962 Fords in the long Ford line. Contact your Ford District Fleet Sales Manager or your local Ford Dealer to get the full story on all 33 models.

Please keep this book on your desk for a handy reference sheet to the cars that are beautifully built for economy and lasting value!

PRODUCTS OF Ford MOTOR COMPANY

THO IN U.S.A.



This outstanding record has been achieved as the result of Duncan's perpetual research and engineering development programs.

By anticipating future municipal parking requirements Duncan repeatedly has been first to offer modern, efficient equipment geared to meet up-to-the-minute municipal demands.

Newest development is the Duncan V.I.P. (Vault Insured Protection) meter illustrated above. World's only vandal-resistive meter strong enough to combat todays growing meter vandalism problems.

Cities previously plagued with sustained losses in meter revenue, replacement parts and collapse of parking control programs due to forceful entry and theft from ordinary meters, now report substantial increases in meter revenues and effective curb parking control **from the same areas.**

Look to the Duncan V.I.P. meter to achieve and protect your Citys' anticipated annual meter revenue. Available in all curb and off-street rate combinations utilizing pennies, nickels, dimes, quarters and tokens.

DUNCAN
PARKING METER
DIVISION OF NAUTEC CORPORATION
835 NO. WOOD STREET · CHICAGO 22, ILLINOIS

Fill out coupon for Demonstration and complete details . . . Write today.

DUNCAN PARKING METER
Division of Nautec Corporation
835 NO. WOOD STREET
CHICAGO 22, ILLINOIS

NAME_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

TITLE_____

New style, new savings, new safety for your fleet in Rambler for 1962!

102 WAYS NEW AND BETTER! Scores of improvements for reduced fleet operating costs and maintenance! Plus low initial cost in a wide range of compact models—American, Classic 6, Ambassador V-8. Features like this are standard on all or most 1962 Ramblers: Double-Safety Brake System, with tandem master cylinders—one for front brakes, one for rear; 33,000-mile chassis lube; 4,000-mile engine-oil change; greater road clearance; Road Command Suspension for smoother ride; acoustical (and insulating) ceiling of molded fiber-glass. And all have no-rust-out Ceramic-Armored muffler and tailpipe, and famous Deep-Dip rustproofing up to the roof! See your Rambler dealer for an on-the-job test, or contact: Fleet Sales Department A-11, American Motors Corporation, 14250 Plymouth Road, Detroit 32, Michigan.

SAVE ON FLEET LEASING! Ask your leasing company for low Rambler rates, or write us for the names of available leasing companies located in your area.

Rambler

World Standard of Compact Car Excellence!

Note the 35-foot supports used for the traffic lights at 18th Street and Peach.

One street—two intersection problems

By **R. B. STEYTLER**
City Engineer
Erie, Pa.

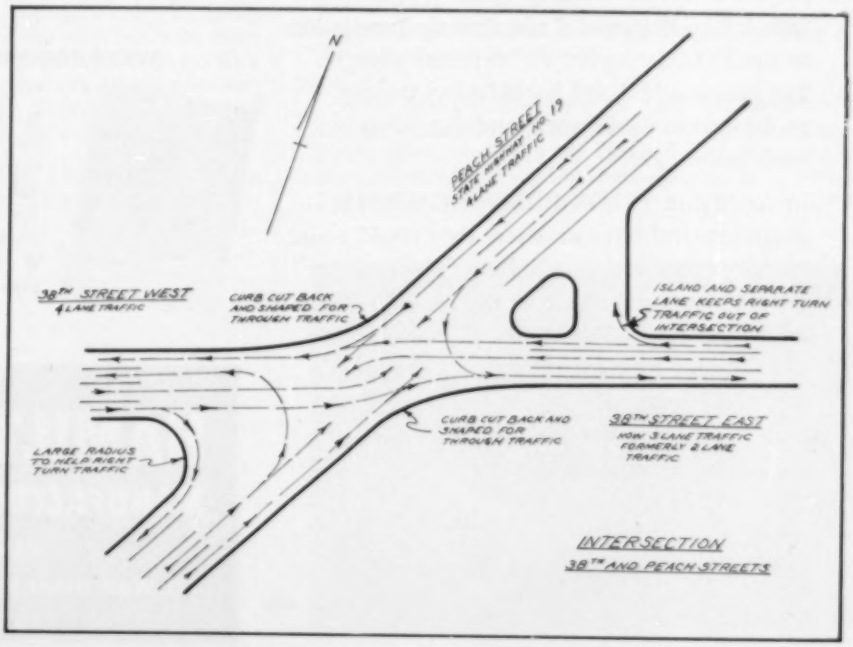
Peach Street, normally a name that one associates with a quiet suburban outskirt, is one of Erie's major traffic ways. And it was having traffic problems at two places: 18th Street and 38th Street, both major intersecting thoroughfares. But Peach Street doesn't have them now.

The problem at 38th Street was traffic movement. First, the street doesn't intersect at right angles, and this always makes trouble for motorists. Next, 38th Street squeezes from four lanes to two at an offset at this point, and this doesn't help matters. So our design had to remove not only the danger but also the irritation in the intersection.

We first made a sketch of this intersection, drawn to scale, and then studied a number of alternate methods. After weighing their advantages and difficulties, we made three remedial improvements:

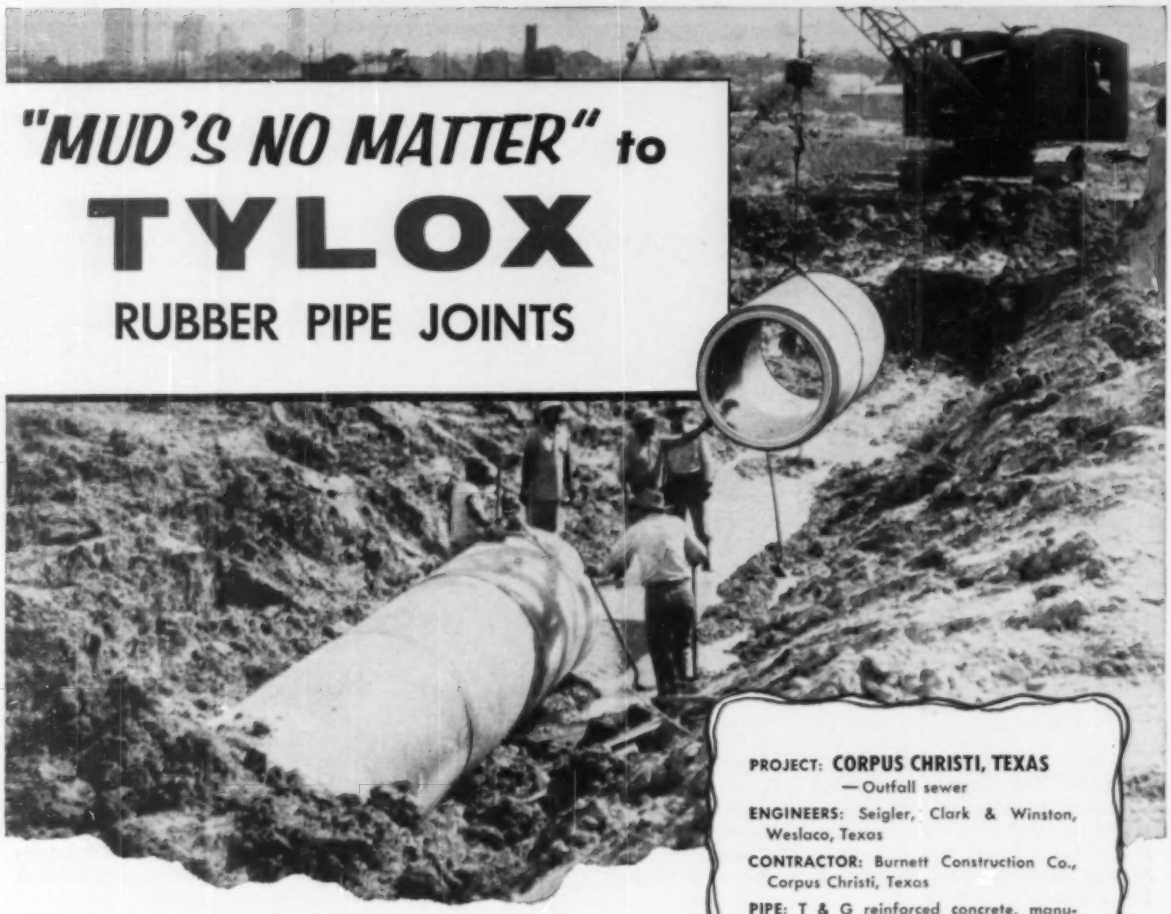
- **applied traffic lane markings that changed the two-lane portion of the street to three, thus allowing through traffic to clear the intersection more quickly.**
- **cut the acute intersection on the opposite side, providing a large radius that helps right-turn traffic.**
- **provided a traffic-divider island and a traffic lane for**

(Continued on page 137)


N
PEACH STREET
STATE HIGHWAY NO. 19
4 LANE TRAFFIC
38TH STREET WEST
4 LANE TRAFFIC
CURB CUT BACK AND SHAPED FOR THROUGH TRAFFIC
ISLAND AND SEPARATE LANE KEEPS RIGHT TURN TRAFFIC OUT OF INTERSECTION
CURB CUT BACK AND SHAPED FOR THROUGH TRAFFIC
38TH STREET EAST
NOW 3 LANE TRAFFIC FORMERLY 2 LANE TRAFFIC
LARGE RADIUS TO HELP RIGHT TURN TRAFFIC
INTERSECTION
38TH AND PEACH STREETS

At the Peach-38th Street intersection, a traffic island, reshaped curbs, and new traffic lanes keep traffic moving smoothly.

"MUD'S NO MATTER" to TYLOX RUBBER PIPE JOINTS



PROJECT: CORPUS CHRISTI, TEXAS
— Outfall sewer

ENGINEERS: Seigler, Clark & Winston, Weslaco, Texas

CONTRACTOR: Burnett Construction Co., Corpus Christi, Texas

PIPE: T & G reinforced concrete, manufactured by TEXCRETE Company, Corpus Christi, Texas

MUD . . . as shown in the photo, was the prevailing condition on this outfall sewer project in Corpus Christi, Texas. Yet the "mucky" conditions did not slow up installation of the TYLOX-coupled 42″ concrete pipe. The line was laid and backfilled as rapidly as the cranes could work, and the joints were *water-tight!*

In specifying TYLOX RUBBER GASKETS, engineers and officials knew they could count on faster pipe coupling to help reduce pipe installation costs, *whatever* the conditions might be. But that's not all . . . in specifying TYLOX they took advantage of a coupling material known also for its ability to make pipe joints leakproof and root-proof for the life of the pipe itself.

WRITE FOR NEW TYLOX BROCHURE

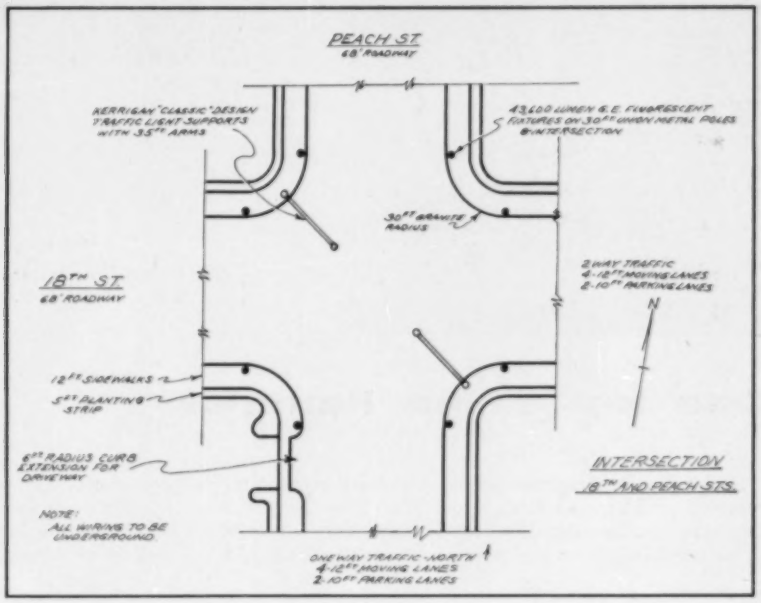
It contains engineering data and fully illustrated case histories showing **why** TYLOX Rubber Gaskets are specified the world over to assure the economy, safety and longevity of sewerage and drainage pipe lines.

HAMILTON KENT MANUFACTURING COMPANY

KENT, OHIO

427 West Grant St. ORchard 3-9555

5068



At the Peach-18th Street intersection, underground wiring, attractive lighting, traffic-signal fixtures, and careful landscaping all add interest to the entrance into downtown Erie.

(Continued from page 135)

cars wishing to make a right turn on the other acute intersection.

We carefully prepared lines and direction arrows on the streets to instruct the drivers and thought that we might have to redesign the traffic-signal sequence. The changes were so effective that it was not necessary.

Traffic has used this redesigned intersection for two winters. During the first, when snows blotted out the lane markings, traffic became badly snarled. By the second winter, drivers followed the correct pattern, even when markings were not visible.

The intersection at 18th presented a different problem. At this point, Peach Street is a one-way thoroughfare entering the downtown district. The problem was to design a physically attractive intersection that would allow safe movement of heavy traffic at all times. To do this we adopted the following measures:

• To maintain high-intensity non-glare lighting at night, we installed eight 43,600-lumen General Electric fluorescent fixtures in the intersection mounted at 30 feet on Union Metal poles.

• To give the street an uncluttered appearance, we placed all overhead wiring underground.

• To get the traffic lights out into the traffic lanes, we used the Kerrigan "Classic" design traffic-light supports with 35-foot overhang.

• To give a better outline of the limits of the intersection, we replaced the concrete curb with granite for its radii. Each radius is 30 feet to allow easier turns in all directions.

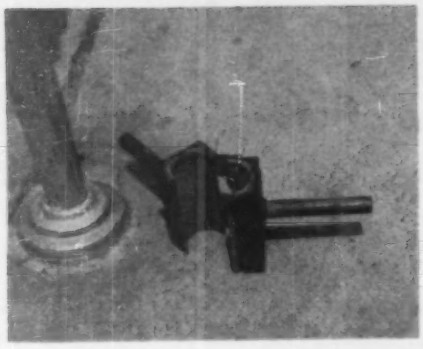
• To remove other conflicts, we moved all driveways out of the intersection and gave each a 6-foot radius curb at its new location.

• To provide a final touch we planted low-growing shrubbery behind the sidewalk.

These solutions represent the results of cooperative studies by the Police Department and the City Engineer's office. Normally the correction of traffic problems, including design of intersections, is a Police Department responsibility. ◄◄

Measuring skidmarks

City attorneys and county prosecutors watch Jean Keneipp (kneeling) measure skidmarks at the Traffic Court Prosecutors' course at the Traffic Institute, Northwestern University, Evanston, Ill. ◄◄



The welded steel hammer is hinged for easy positioning.

One tap and the meter slides off the post.

One tap of the hammer

Parking meters corroded to meter posts present no removal problems in Hollywood, Fla. Shopman Earl Seymour has developed a slide hammer which gently eases the heads from the meter posts so that they can be overhauled, cleaned and reset. The hammer is hinged to facilitate positioning and is constructed of steel with welded joints. The shock of hammering has never damaged any of the clock mechanisms. ◄◄

Top traffic measures in Rochester

The 316,000 people of Rochester, N. Y., have 4,250 metered spaces in which to park. The 1,721 street meters collect an average of $71.06 per meter per year; the 957 meters in the city-owned parking lots collect an average of $108.19 per meter per year and the 1,572 meters located in our ramp garages collect an average of $253.20 per meter per year.

Annual costs as percentages of revenue run:

- **policing 2.5%**
- **collecting and handling coins 3.5%**
- **repairs 5.5% (for parts and salaries)**
- **all other costs 38%**

Thus the net parking-meter revenue for city purposes amounts to $70 or $75 per meter. The "all other costs," which amounts to $243,500, includes $43,100 for light, heat and power, $6,175 for insurance, $12,300 for snow plowing and removal, and $175,425 for maintenance and operation.

Curb Parking

While we have no parking restrictions between 4 p.m. and 6 p.m. throughout the entire central business district, we have abolished a great many curbside spaces on primary or arterial streets in the district. Regulated parking continues to be permitted along the curb on the secondary streets.

All day parking is provided in ten city-owned lots and one part of a ramp garage.

Traffic Signals

We have 60 interconnected signals in the CBD controlled by a master controller located in the Bureau of Traffic Engineering offices. We use progressive timing on Main Street, which in Rochester carries the heaviest east and west volumes through the central business district between 7 p.m. and 7 a.m. During the peak hours from 7 a.m. to 7 p.m., simultaneous timing in the core of the CBD is used, for our experience has been that during high-volume hours the progressive timing technique fails to move traffic as efficiently as the simultaneous system.

Also four arterial streets have been separately interconnected for progressive timing. Volume-density and semi-actuated equipment has been installed at the street terminals of the recently opened Eastern Expressway ramps.

We are proud to report that an extensive system of expressways and freeways is being developed. An inner loop is being constructed around the CBD which will allow traffic to move around it faster, safer and easier. The first one-fourth of the inner loop completed was built as an expressway facility, the next quadrant was built as a freeway, the third quadrant is now under construction and will be a freeway facility, as will the last quadrant which is nearly ready for letting.

Around the fringe of the city, an outer-loop freeway is being constructed. About 35% of the outer loop is complete.

Radiating out from the inner loop, a network of spoke-like freeways is being developed also. Last fall, the first spoke, a six-lane freeway, was opened in the southeast quadrant of the city. Three of the spokes will be extended to connect to Interstate 90, the New York State Thruway.

In the CBD, during the past year, Broad Street, a principal street approximately parallel to Main Street, was extended eastward to the Mid-town Plaza development, a remarkable revitalization project in the core of the CBD. Leading directly from the Broad Street extension are ramps to a nearly completed, three-story underground, metered parking facility with a capacity of over 1,950 vehicles.

DAVID H. BULMAN
Senior Traffic Engineer
Rochester, N. Y.

Colonial Palms Golf Course, Miami, Florida

Patented

Wouldn't your course get more play if it had WIDE-LITES?

How many of your golfers have to limit their play to weekends because of their office hours? And how many times does dusk keep them from playing the back nine?

There's no *need* for your course revenue to go down with the sun. Wide-Lites make it practical to light a complete 18-hole course, to give extra revenue all through the week. Relieves the week-end congestion at your course, too!

At the course shown above, 123 Wide-Lites mounted on palm trees give so much light that snapshots can be taken with daytime exposures. The 3400-yard par 4 course is so evenly lighted that a top touring pro playing a *night* exhibition match broke the *daylight* record for the course with an eight-under-par 52!

Wide-Lites, with their broad light pattern, give ideal sports lighting, free from annoying shadows or "hot spots." The Wide-Lite saves money, too—its rugged cast aluminum body and tempered glass lens protect the lamp and reflector . . . its mercury vapor lamp lasts 9 to 12 times longer than incandescents . . . power requirements are less.

Think for a moment how much more revenue Wide-Lites could bring to your course—then mail the coupon!

WIDE-LITE.

HIGH EFFICIENCY FLOODLIGHTS

In Canada:
Wide-Lite Division,
Wakefield Lighting Limited,
London, Canada

WIDE-LITE CORPORATION Dept. JAI
4114 Gulf Freeway • Houston, Texas

Send more information on Wide-Lites for golf. No obligation, of course.

Name_____

Title_____

Address_____

City_____ Zone_____ State_____

YOU ARE INVITED TO BECOME AN AMBASSADOR FOR THE UNITED NATIONS

United Nations Headquarters in New York . . . inspiration to millions of visitors.

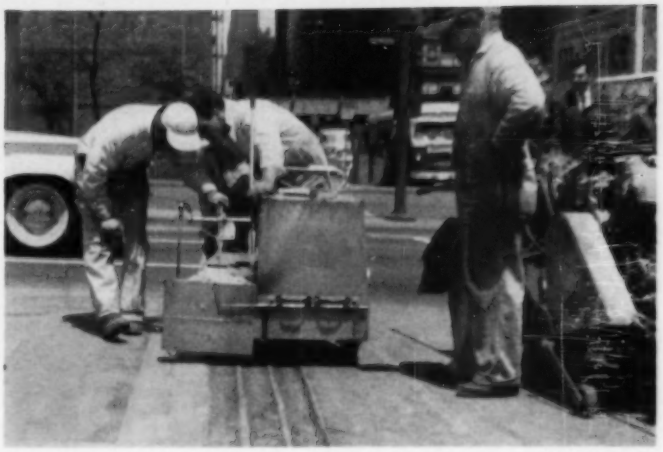
If you have ever wished that you, personally, could do something practical to weight the scale for peace—here is your chance. Get the facts and spread the facts about the work of the United Nations. Help build the public support it needs to do an effective job. ● ***The U.N. is the only positive alternative to war.*** It has stepped in time and again to prevent a major war. It is the only existing practical means for settling quarrels between nations by *negotiation, mediation, conciliation.* It can resolve the dilemma of nuclear holocaust or surrender to brute force. ● ***The U.N. is building a solid foundation for future peace and human progress.*** Continuing, long-range programs work to stamp out hunger and disease, to spread education and technical know-how, to help poor nations lift themselves by their bootstraps. The U.N. can do this more effectively than any one nation acting alone. ● ***We need the U.N. and the U.N. needs us.*** It is the most potent forum ever devised for mobilizing world opinion. It is the one place where our country can work with other nations in the common cause of peace, with freedom and justice. ● A strong United Nations—and possibly survival itself—depends on the moral support of well-informed citizens. That's where *you* can do a job. Become a goodwill ambassador for the United Nations—among your friends and neighbors, in your shop, office, club. To start, write for a free copy of "THE U.N. IN ACTION"—a clear, concise briefing for thoughtful Americans. Just send a postcard to the address shown below.

UN

UNITED STATES COMMITTEE FOR THE UNITED NATIONS 375 Park Ave., New York 22, N. Y.

A non-partisan, non-profit educational organization whose Chairman is appointed by the President of the United States.

Grooved pavement traffic stripes



A concrete saw grooves the pavement so that it can receive the thermoplastic striping.

A new method of placing traffic lines on heavily-traveled streets is passing its tests with flying colors in the Chicago area. In this experiment, a Concut model SC 369 surface cutter grooved the pavement five inches wide and a quarter of an inch deep. Thermoplastic striping material was allowed to flow into this channel until it was flush with the road surface. The lines consist of five yellow stop bars placed at right angles to the centerline; they are constantly subjected to traffic.

This striping shows the most wear because of the abrasive road dirt and grit which traffic constantly grinds into and across the surface during the many stops and starts across them.

Experimental Sites

The experimenters selected three locations on the primary road system in Cook County, Ill. Two are in the suburban areas and one is in downtown Chicago. The three locations are:

Algonquin Road (Illinois Route 62) and Barrington Road.
Algonquin Road and Sutton Road (Illinois Route 69).
Congress Street Expressway and Wells Street.

The material is wearing extremely well, even at the heavily traveled Congress Street Expressway. Leslie J. Sorenson, deputy commissioner of Streets and Sanitation, estimates that it should provide a useful life of at least five years. Where the thermoplastic is applied without the grooves, the useful life is a minimum of 18 months, and for paint it is eight weeks. The grooving requires substantially more thermoplastic.

Perma-Line Midwest Corporation, Chicago 7, cut the grooves and applied the experimental marking for the Cook County Highway Department. ◄◄

Traffic problems head for the suburbs

Transportation in large American cities reached a critical stage at least ten years ago. Since then, the problem has grown increasingly complex and is now pre-empting the attention of national and state as well as local leaders.

In medium and smaller communities, however, the crisis is yet to come. Solutions can still be found without extensive disruption of the community—*if aggressive planning and development programs are undertaken without delay.* Leadership for these programs must come from a local official.

These were major points made by Willard F. Babcock, North Carolina's director of highways, keynoting the APWA Seminar on planning and programming urban street construction recently held in Richmond, Va. The first of a proposed regional series, the two-day seminar was attended by local, state and Bureau of Public Roads officials from five states surrounding the Richmond area. Several communities were represented by their transportation planning team, public works director, traffic engineer and city planner.

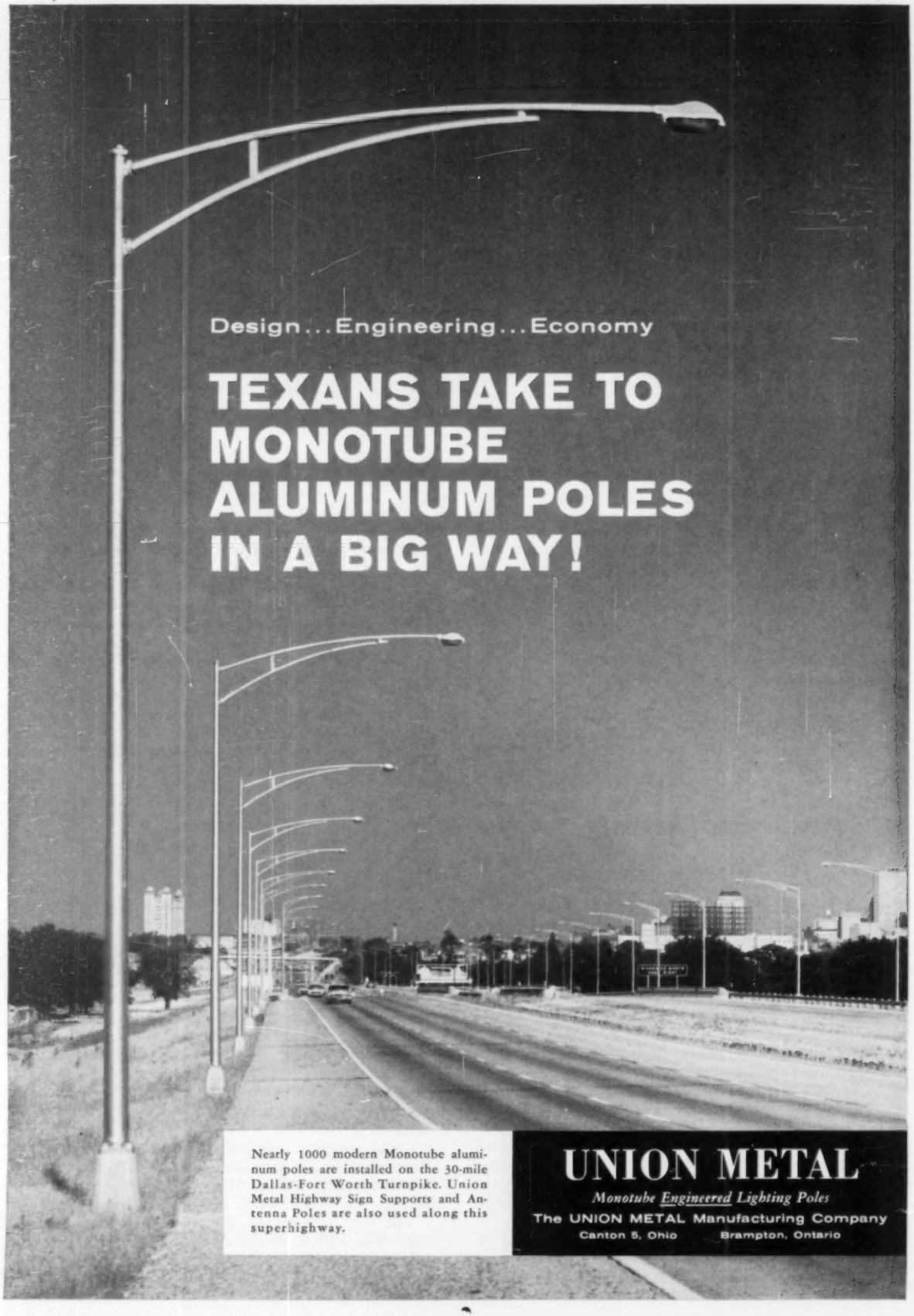
Planning study techniques were discussed during the first day and again in small discussion groups during the evening. Speakers gave case examples of the application of National Committee on Urban Transportation studies in several cities. Land-use studies and the contribution of city-planning techniques toward developing a sound plan were also detailed.

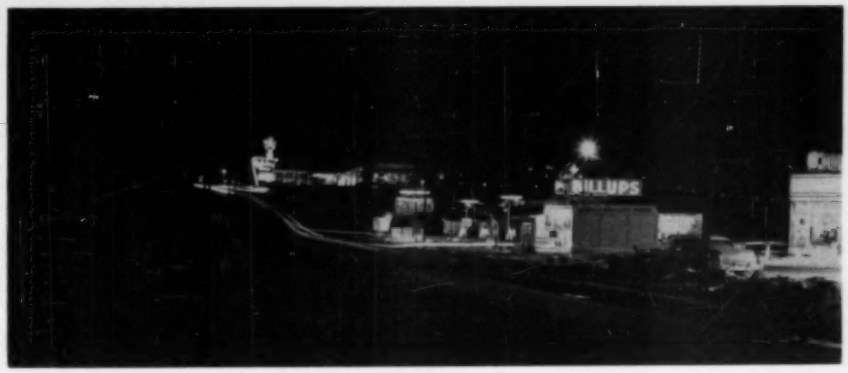
The importance of classifying the street system and establishing functional standards for each class was stressed. Again, in the words of the keynoter, the problem is not "What right-of-way is available?" The problem is "What capacity is needed?"

The final session was devoted to "Carrying Out the Plan." John Bailey, executive director of the Urban Traffic and Transportation Board, Philadelphia, and chairman of the APWA Committee on Transportation, discussed approaches to financing and implementing a program. Other speakers dealt with establishing priorities, gaining public support and keeping a plan up-to-date.

Other speakers included Arthur Row, Philadelphia; Alan Voorhees, Thomas Deen and Donald Loutzenheiser of Washington; Marble Hensley, Chattanooga; Henry Barnes, Baltimore; and, J. P. Mills, Jr., Richmond.

The next seminar on this subject planned by the American Public Works Association will be held in the mid-west during the coming fall. Other regional meetings to follow will be announced by mail to interested city and state officials. ◄◄


Design...Engineering...Economy
TEXANS TAKE TO MONOTUBE ALUMINUM POLES IN A BIG WAY!
Nearly 1000 modern Monotube aluminum poles are installed on the 30-mile Dallas-Fort Worth Turnpike. Union Metal Highway Sign Supports and Antenna Poles are also used along this superhighway.
UNION METAL
Monotube Engineered Lighting Poles
The UNION METAL Manufacturing Company
Canton 5, Ohio
Brampton, Ontario



This stretch of highway previously had only spotty lighting, chiefly from advertising signs.

It is safer and more pleasant in Asheville

By **CARL B. HYATT**
Director of Public Safety

Modern mercury-vapor street lighting has become a tourist attraction in Asheville, N. C.

When this resort city, close by the Great Smokies, expanded its city limits last year, it took in major roadways leading east and west and, with the support of the Carolina Power and Light Co., proposed the extension of its downtown lighting to the highways at the edge of the new city limits.

Two stretches included in the project are Tunnel Road, an eastern "funnel" into the city containing a long string of motels, restaurants, and service stations, and Patton Avenue, the heavily-traveled westward "gateway to western North Carolina."

Although the Tunnel Road section was already ablaze with lighted advertising signs, the roadway itself was poorly lighted. Business owners and city officials agreed that high-level lighting would do much to stimulate business and attract and hold tourists.

The final plans called for a total of 266 400-watt General Electric mercury luminaires. Tunnel Road received 138 of the 20,000-lumen color-improved units; Patton Avenue, the other 128.

The Tunnel Road system provided for 118-foot staggered spacing, and a calculated illumination level of 1.3 footcandles. The luminaires are mounted 30 feet above the roadway on six-foot upswept mast arms. The three-lane concrete road is 30 feet wide.

The poles are set ten feet back from the edge of the pavement, giving a lighted roadway width of 50 feet.

A 240/480-volt, three-wire multiple circuit was used to feed the 60-kilowatt load. All lights were connected using a 240-volt reactor-type ballast.

The Tunnel Road district has always had a high accident rate, particularly after dark; however, during the first month with the new lighting the Police Department investigated only one accident after dark.

Patton Avenue is a 1.7-mile strip of divided highway —two 24-foot paved traffic lanes with a 20-foot median strip. The designers placed the poles in the median strip, equipping each with two luminaires mounted on ten-foot brackets installed back-to-back (except on the bridge across the French Broad River, where staggered poles each hold one luminaire). The poles, spaced 148 feet apart, provide 1.1 footcandles.

The distribution supply also was a 240/480-volt, three-wire, multiple circuit, with reactor type ballast. The connected load is 54 kilowatts.

During the winter of 1957-58, Carolina Power and Light installed high-level mercury-vapor lighting for Asheville's business district, West Asheville and Biltmore. These and the latest installations bring to 791 the mercury-vapor luminaires in Asheville. ◄◄

Today the same road is brighter, safer and more attractive to tourists.

Brilliant Congress Street is easier to drive on and easier to cross at night.

Downtown Portland uses fluorescents and mercuries

Portland, Maine, is a year along in a three-year street-lighting modernization plan. The old equipment consisted of 25-foot poles with the bracket torchiere mounted at the 20-foot level.

The poles have been fitted with a davit-type arm and fluorescent luminaire. The extensions were manufactured by Pfaff and Kendall of Newark, N. J. They extend seven feet above the top of the pole and six feet over the street.

Of these, 152 support General Electric 21,000-lumen fluorescent luminaires equipped with two power-proove lamps. The remaining 78 davit extensions support General Electric M-250 power-pack luminaires each with a silver-white mercury lamp delivering 11,000 lumens.

P. E. Weatherbee
Division Director Lighting Sales
Central Maine Power Company

An old pole gets a new davit extension and fluorescent lamp after losing its obsolete "torchiere-bracket" luminaire.

High spots in highway-lighting design

Modern highway lighting is now more than ever before, the application of the "science of seeing." Its prime function is to provide quick, comfortable and accurate "seeing" after dark.

Being a science, the application and design of street-lighting equipment is governed by certain laws. Highway lighting requires a technician both in planning and in the application of the equipment. In fact, a well qualified consulting engineer should be employed.

Highway lighting here is distinguished from the lighting of local streets within municipalities. These highways are expressways or freeways, major arterial streets and rural trunk highways.

The engineering recommendations given in the Westinghouse Lighting Engineering Guide are in concurrence with the latest practice of the Illuminating Engineering Society's recommendation, and American Standards Practice.

Traffic roadways, whether referred to as turnpikes, expressways or highways, are intended to facilitate the movement of vehicular traffic by day and by night.

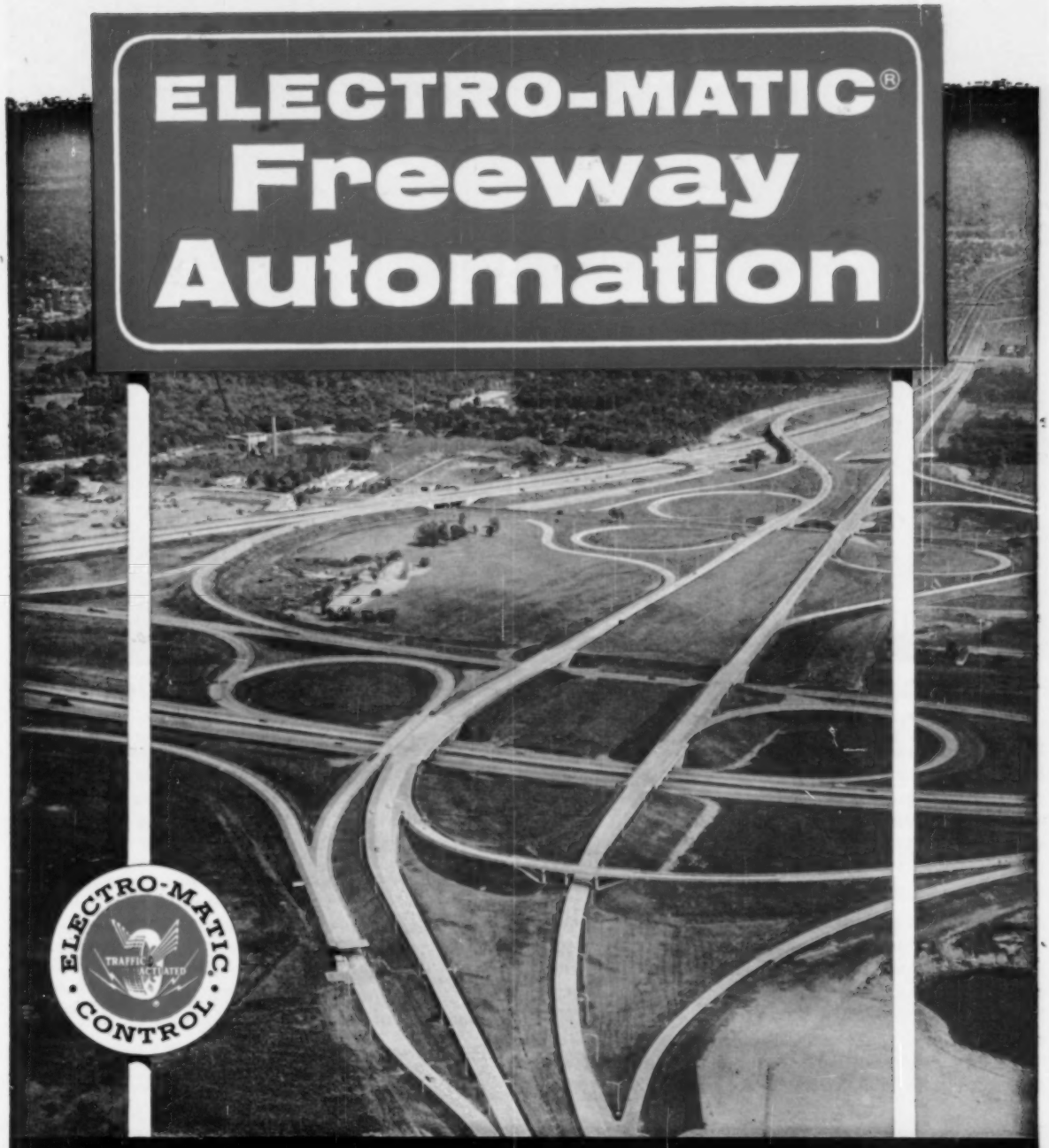
The design standards for the roadway being planned today should incorporate:

- **Dual-lane construction**
- **Provision of over- or under-passes wherever the highway intersects a railroad**
- **Separation of grades at the highway intersections, except in isolated locations.**
- **Construction design features to accommodate traffic anticipated for the year 1975.**
- **Roadway design speed of at least 70 mph.**
- **Complete elimination of red lights or stop signs on all the principal traffic roadways.**
- **Fixed artificial lighting, provided for all areas where optimum visibility is a recognized necessity for traffic safety and greater roadway usability.**

(Continued on page 147)

Get Maximum Production • Service • Safety on Freeways with

ELECTRO-MATIC® Freeway Automation



- Entrance Ramp Control
- Exit Ramp Clearing
- Speed Limit Changing
- Tunnel Ventilation Control
- Lane Control
- Area Control Center Automation
- Surveying and Data Processing

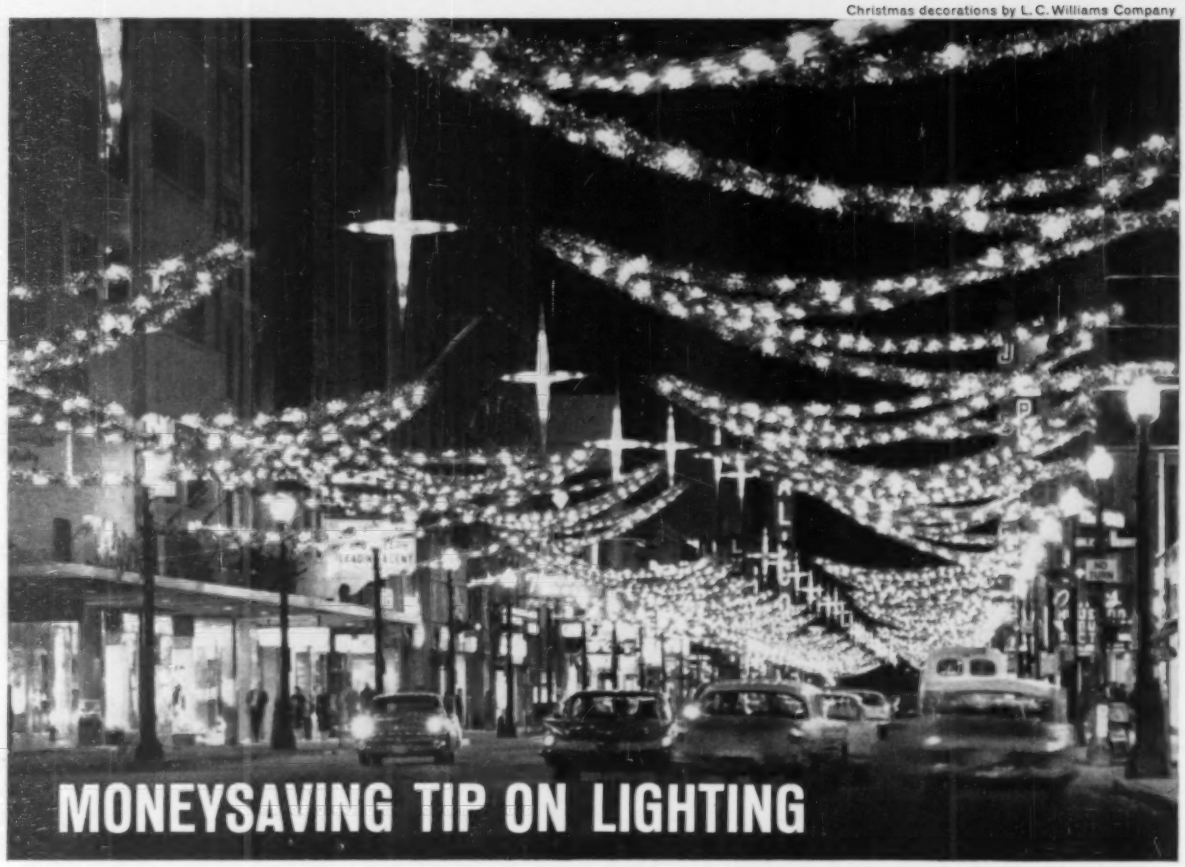
Send for Electro-Matic Freeway Automation Brochure (No. F-101)

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES
NORWALK, CONNECTICUT

A DIVISION OF LABORATORY FOR ELECTRONICS, INC.

Christmas decorations by L. C. Williams Company



MONEYSAVING TIP ON LIGHTING

from the man who makes street decorations

Relamping is easier, much more efficient, when you choose from the Sylvania line. You quickly get exactly what you want—anything from 25-watt colored incandescents to 1000-watt Mercury Lamps.

This is just one reason why L. C. Williams Company of Houston, Texas—the largest maker of street decorations—uses Sylvania exclusively.

Another reason: throughout this vast line, Sylvania lamps are *unsurpassed* for the amount of light they give. They actually *lower* your Total Cost of Lighting (which means cost of lamps plus power plus maintenance). And Sylvania backs this surprising claim with an exclusive money-back guarantee:

"Sylvania Incandescent Lamps are guaranteed to meet or exceed Sylvania's Published Incandescent Lamp Ratings and the Lamp Specifications of the U. S. Government as measured by the U. S. Bureau of Standards. If any Sylvania Incandescent lamps do not live up to this standard of performance, the lamps may be returned to the supplier for a full refund of the purchase price."

Plan now to save even more by relamping other street lights at the same time you put up decorations. And to be sure everything's on hand the day you're ready to go, see your Sylvania representative now . . . or write: Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

With 6,000 different kinds of lamps

SYLVANIA LIGHTS THE WAY

SYLVANIA

SUBSIDIARY OF

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

(Continued from page 144)

Experience has indicated a justification for lighting the main traffic lanes on limited-access roadways, especially where the interchanges or intersections are closely spaced. Also, in areas where some pedestrian traffic is present, main traffic lane lighting is a valuable aid to safety.

The illumination level for main traffic lanes should follow the minimum specifications as outlined in the American Standard Practice with due consideration for the potential traffic volume and vehicular speed on the roadway 25 years hence.

On a traffic thoroughfare or freeway, the lighting units should be located at a sufficient distance from the edge of the curb or traffic lane. This minimizes the chance of a serious accident should a car be forced to depart from the regular assigned traffic lane.

As a general rule, if the over-all width of the roadway including median strip does not exceed 125 feet, the area should be treated as a single roadway with the lighting standards located on the outside.

There is a tendency under the new concept of highway construction to increase the width of the median strip. Where the total width of the roadway including the median strip exceeds 125 feet, lighting units may be placed in this strip to supplement the outside rows of lighting units.

When the median strip is wider than about 30 feet, it will usually be more practical to consider the individual roadways as separate problems and light each individually.

At a highway interchange the lighting system should be arranged so that it will aid the driver in selecting the roadway to his destination, minimize the chance for confusion, and make such roadways more comfortable and convenient for night driving.

The specified lighting level for interchanges should be maintained as a minimum. Preferably it should be a little higher than that on any of the adjacent roadways. Two practical methods of lighting the complicated interchange are:

(1) Confine the light to the narrow roadways by choosing a light distribution and spacing to match the area, and select a light source to provide the required footcandles. This method usually results in smaller light sources, closer spacings and more units for a given length of roadway.

(2) Use the same type of luminaire on the interchange as selected for the adjacent roadways and permit the spill to illuminate the complete area.

Intersections

Good practice is to provide an illumination level for intersections equal to the sum of the elimination values on the intersecting roadways.

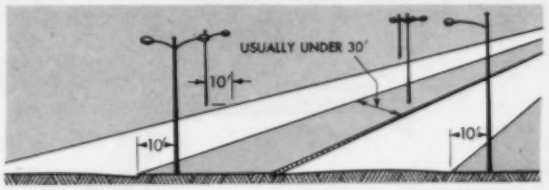
The yellow amber color associated with caution may be substituted for the conventional incandescent, mercury or fluorescent by using an amber colored refractor with the fluorescent mercury lamp or a yellow filter in a clear refractor.

Underpass Lighting

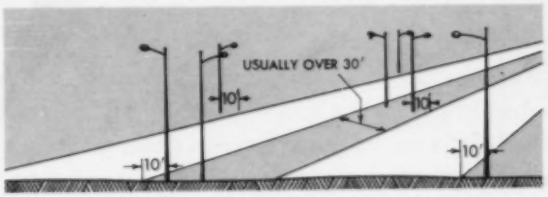
In a short underpass less than 75 feet in length no lighting other than the regular roadway lighting system will be required.

For a medium length underpass (75 to 150 feet) daytime lighting usually is not required for adequate driving visibility. Daylight penetration from each end, plus the silhouette effect of the opposite-end brightness, generally provides satisfactory visibility.

At night a lighting system through the longer underpass is usually required. The illumination level in footcandles, or degree of visibility, depends on type of structure, location, volume of vehicular and pedestrian traffic. A five to ten footcandle average level



Standards located in a wide median strip or where the total roadway exceeds 125 feet.



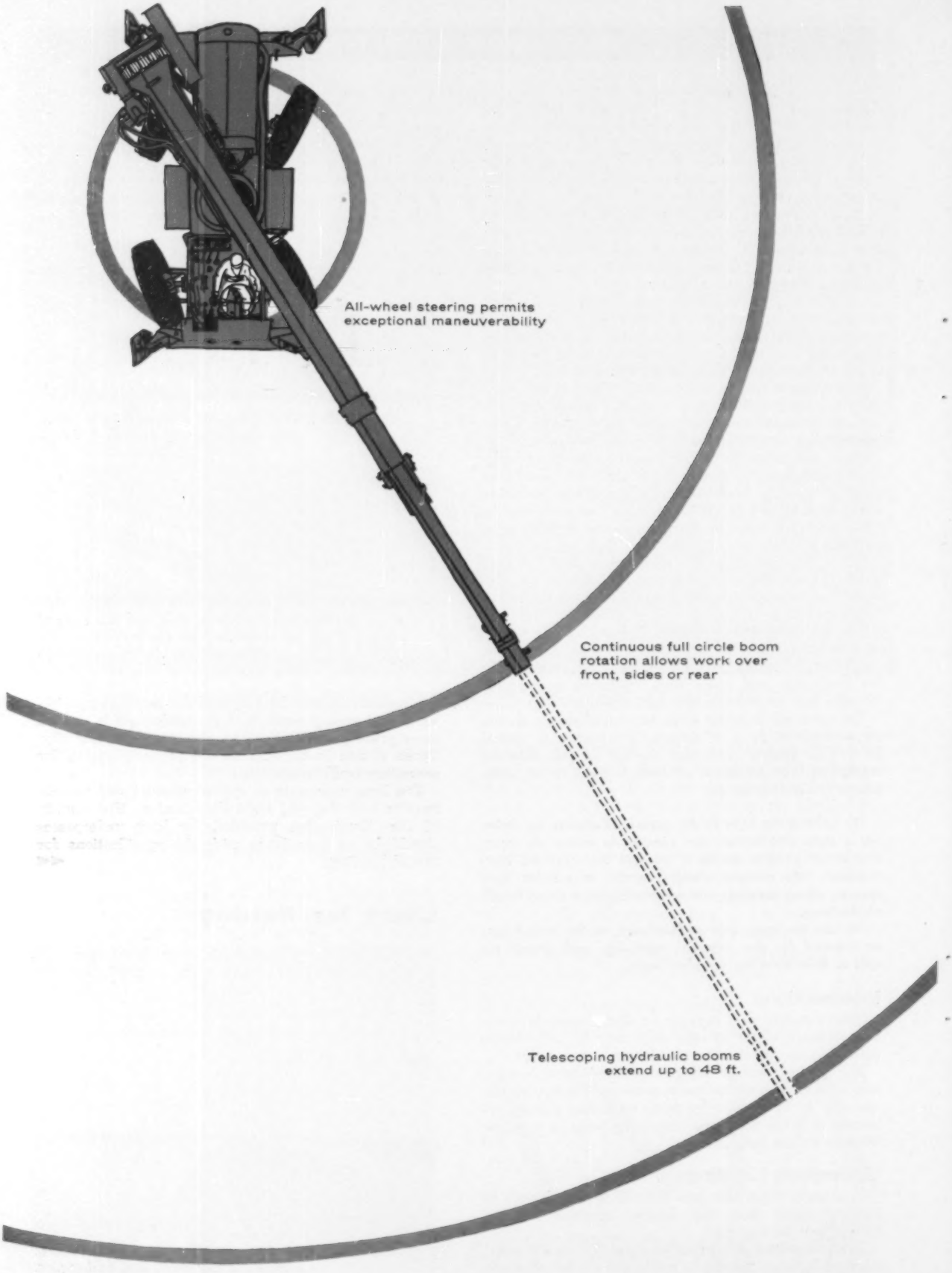
Median strip 30 feet or over with two rows of standards located in the median strip; each roadway treated separately.

of illumination may be required for satisfactory visibility and seeing comfort, if the underpass is located on a primary retail business street of a major city. Three to five footcandles should prove adequate for secondary traffic roadways.

The long underpass or curved viaduct will usually require both day and night illumination. The quality of the illumination provided for long underpasses should be in accordance with the specifications for tunnel lighting. ◄◄

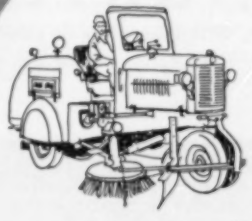
Light for fishing

General Electric 400-watt mercury-vapor luminaires light this Key West, Fla., fishing pier.


All-wheel steering permits exceptional maneuverability
Continuous full circle boom rotation allows work over front, sides or rear
Telescoping hydraulic booms extend up to 48 ft.

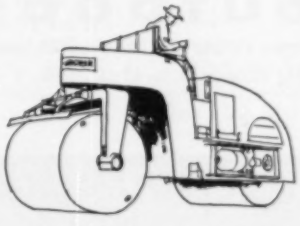
LIFT, CARRY AND PLACE IN AREAS WHERE OTHER CRANES CANNOT WORK

Tight, cramped working quarters and low overhead clearances pose no problem for Austin-Western hydraulic cranes. Because they've got the easy maneuverability of all-wheel steering *plus* long reach and big load capacity. Telescoping booms swing in continuous full circle on most models; extend to maximum 48-ft. length on Model 410. Safe, precise, easy to operate. Rubber-mounted, they work indoors or out equally well —most travel at speeds to 35 mph. A-W owners tell us they're perhaps *the* most useful multi-purpose pieces of equipment you can buy. They do just about everything . . . from plant maintenance or construction equipment repair to materials handling tasks. And they can be even more useful equipped with clamshell, dozer blade, snow plow, magnet, personnel platform, or other attachments. They come in 5 models—capacity ranges up to 11 tons; self-propelled, truck or stationary mountings. Learn just how profitable an A-W would be in your operation. Get facts from our distributor or write us direct.



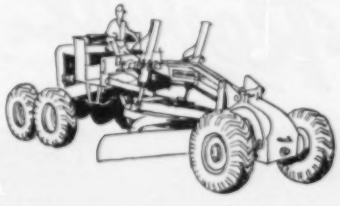
A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus yd. Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W COMPACTION EQUIPMENT

Variable weight tandem and 3-wheel rollers to 14 tons; 3½-6 ton portable tandem; Roller-Compactor; vibratory attachment for most 3-wheel rollers.

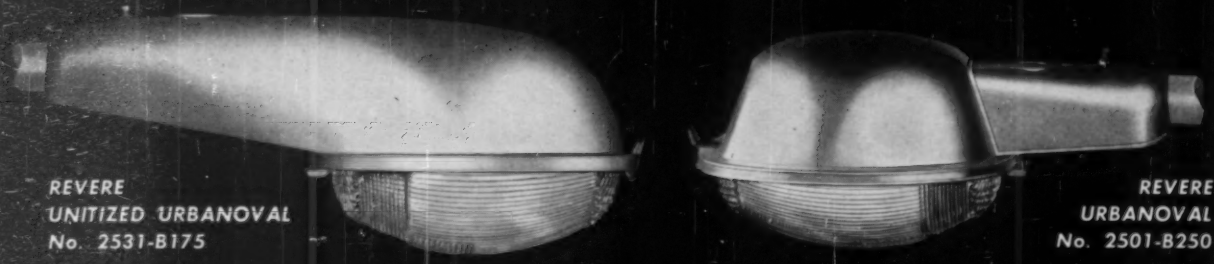


A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classifications to 30,000 lb., power ranges to 165 hp

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON

BALDWIN BLH LIMA-HAMILTON



REVERE
UNITIZED URBANOVAL
No. 2531-B175

REVERE
URBANOVAL
No. 2501-B250

New Revere 2500 Series Urbanoval luminaires use 100, 175 or 250-watt mercury lamps. Unitized Urbanoval features built-in constant-wattage or reactor ballasts. Conventional Urbanoval is designed for external ballasting. Both types are available with or without mounting adapter for E.E.I.-NEMA standard plug-in locking-type photo-electric control. Choice of Revere-Corning Pyrex® molded prismatic refractors provides I.E.S. Type II or Type II—4-way distribution (or Type III or 4-way with phosphor-coated lamps). Available with 1¼", or 2" slipfitter.

NEW FAMILY OF REVERE LUMINAIRES

New *unitized* oval mercury luminaires with built-in ballast components are the latest addition to the Revere family of street lighting equipment. New 2600 Series Endoval luminaires provide high-level, glare-free illumination for arterial streets and highways. New 2500 Series Urbanoval luminaires are designed to provide economical lighting for residential areas or secondary streets where uniform, low-level lighting is desired. Both series offer the advantages of modern styling, substantially reduced installation costs, and efficient, economical performance.

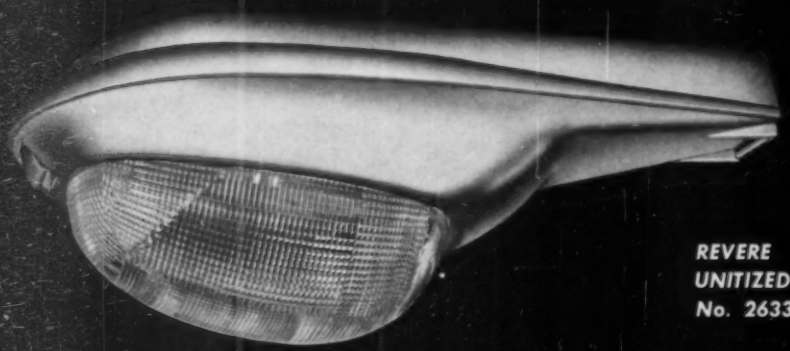
Revere's new unitized luminaires together with newly designed conventional luminaires let you solve every street and highway application problem the one *best* way. You can select high quality, design-matched Revere luminaires, poles and equipment specially engineered for every street lighting need. *Send for complete catalog information and technical data.*

Revere
ELECTRIC MFG. CO.

OUTDOOR LIGHTING

Revere Electric Mfg. Co. • 7420 Lehigh Avenue • Chicago 48, Illinois (In suburban Niles)
Long Distance Phone: NIles 7-6060 • Chicago Phone: SPring 4-1200 • Telegrams: WUX Niles

New Revere 2600 Series Endoval luminaires use 250 or 400-watt mercury lamps. Unitized Endoval features built-in constant-wattage or reactor ballasts. Conventional Endoval employs same housing, reflector and Revere-Corning Pyrex® molded prismatic refractor, but without built-in ballast components. Both types are available with or without mounting adapter for E.E.I.-NEMA standard plug-in locking-type photo-electric control. Adjustable socket positions produce A.S.A.-I.E.S. Types II, III, or IV with proper choice of lamp.



REVERE
UNITIZED ENDOVAL
No. 2633-B400

Filament for dwellings, mercury for business

The rapid growth of Lubbock* over the past decade has necessitated a good street-lighting program and it has been going on since 1948. Incandescent lamps for residential areas and mercury-vapor luminaires for arterial street lighting has been found to be the most economical. We have over 2,000 incandescent lamps and about 40 miles of mercury-vapor lighting in the city. The program calls for 300 residential lights and ten miles of mercury-vapor lighting each year for the next five years.

In the residential areas a 370-watt, 125-volt IES type IIA multiple fixture is used for intersections. This is a four-way lighting pattern. Mid-block lighting is done with a type II light. These are suburban-type open-bottom glass refractors rated for 6,000 lumens. The mounting height of the lamps is 25 feet with the pole set two feet behind the curb and the mounting arm extending five feet into the street. The poles are steel poles manufactured by Municipal Power and Light employees. The current is supplied by direct burial cable run underground from distribution lines in the alley with one photo-electric control controlling two intersections. The photoelectric control mounting was designed by one of our electrical engineers and is in all probability found only in Lubbock. (See the drawing.) The cost of residential lighting in new areas is paid by the developer and the installation is done by Municipal Power and Light employees.

Arterial street-lighting mercury-vapor luminaires are the 400-watt IES type III mounted horizontally 30 feet above the street. In this lighting the steel pole is placed two feet behind the curb and has a mounting arm which extends four feet beyond the curb. The power is supplied by a 6.6-ampere series circuit installed overhead and the lighting level on the street is one footcandle sustained. On a 90-foot street the luminaires are separated by 166 feet. The fixtures are opposite spaced. Opposite spacing is used on all new installations.

A constant current regulator of 30kw-capacity is used.

---

* See Lubbock's Loop on page 115 of THE AMERICAN CITY for February, 1961.

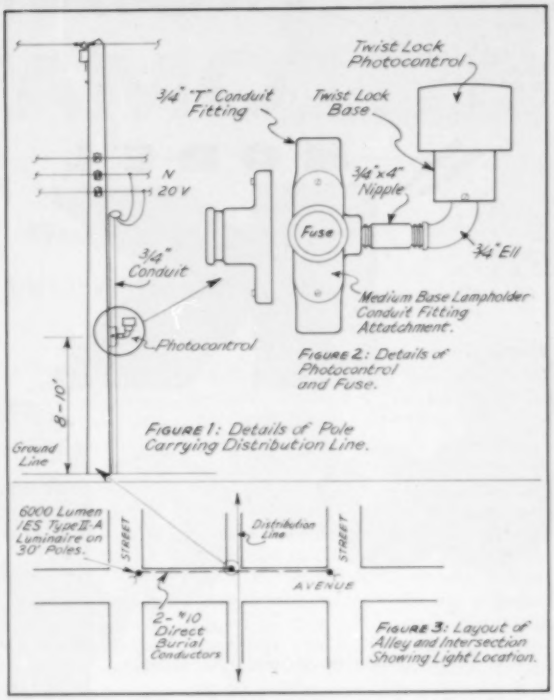


FIGURE 1: Details of Pole Carrying Distribution Line.

FIGURE 2: Details of Photocontrol and Fuse.

FIGURE 3: Layout of Alley and Intersection Showing Light Location.

The photoelectric control was developed by Municipal Power and Light employees.

Two regulators are mounted on one platform and controlled by one oil switch through one photo-electric control. The present policy is to place forty to forty-five lights on one regulator. These regulators are installed in off-street locations. Protective relays turn off the power in the event of a break in the series circuit.

The residential lights are Line Material and the mercury vapors are General Electric, Westinghouse, and Line Material.

H. P. CLIFTON
City Manager
Lubbock, Texas

Cleveland's city hall lights up

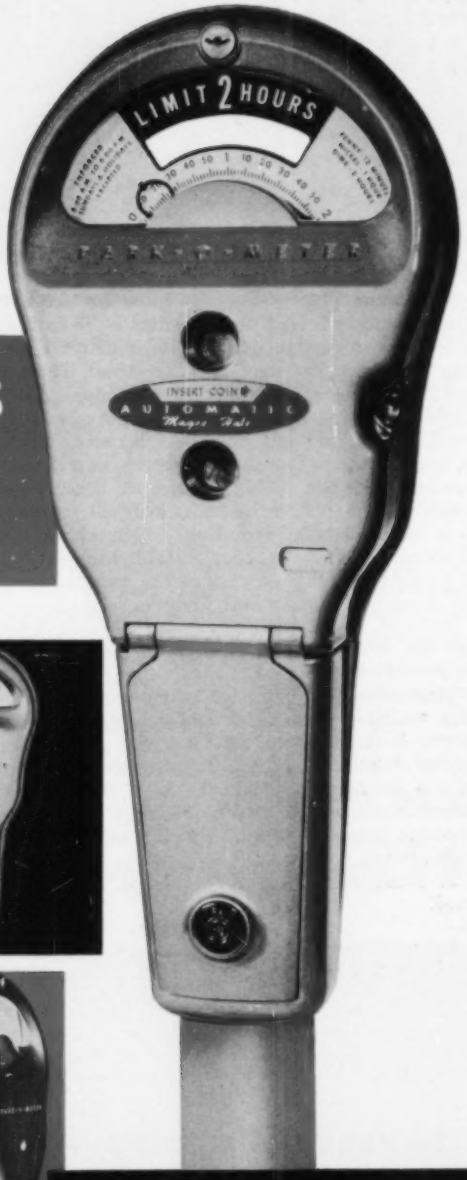
Broad-beam decorative lighting is providing a new sparkle for the city hall in Cleveland, Ohio. The north side of the building overlooking Lake Erie, has two 1,000-watt Wide-Lite units for each of the two poles, the south side required one 1,000-watt unit for each of the four existing.

The area lighted by the Wide-Lite units is approximately 275 feet by 75 feet. ◄◄

NEW FROM PARK-O-METER

AUTOMATIC

MODEL K



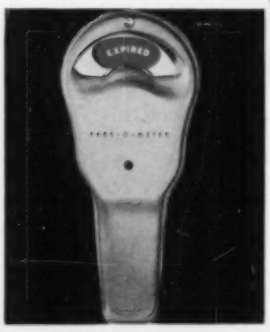
ACCEPTS ALL COINS

New Park-O-Meter Model "K" offers many improvements over previous models.

Exclusive P-O-M coin handling action is even further refined. Now, all four coin sizes and courtesy tokens operate with equal efficiency.

Model "K"—like other quality Park-O-Meters—has hinged work table door for convenience of servicing.

Replace outmoded equipment now. The numerous important improvements in P-O-M Model "K" will increase the profitability of your parking meter system. Write now for more information and complete specifications.



- UNITIZED MECHANISM LIFTS OUT
- HINGED FRONT PROVIDES WORK TABLE

P O M

MAGEE-HALE PARK-O-METER COMPANY
FACTORY & OFFICES: 3909 WILLOW SPRINGS RD.

OKLAHOMA CITY, OKLAHOMA • P.O. BOX 7298 • PHONE WIndsor 6-1491

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

Citizen Groups, with PR Society Help, Win Voter Approval for Wichita Bonds

Next year Wichita, Kan., will see the start of two new municipal buildings—a library and an auditorium—first units of a civic center. Wichita citizens have approved a $15,000,000 bond issue for both by decisive majorities (20,000 to 11,000 for the library; 18,000 to 13,000 for the auditorium) in what City Manager Frank H. Backstrom calls "a true policy decision on the part of the voters, one such as commissions and administrators dream of getting."

That is, citizens initiated and carried out the campaign for the new facilities. And they left up to the municipal government—its planners, architects, and engineers—the design and location of the buildings. Opposition to the bond issues did not grow out of what the buildings would look like nor where they'd be put—since neither of these elements was established before the referendum. As President Carl Bell, Jr., of the City Commission said, the bond issue "was sold largely on faith alone . . . faith in the future of Wichita."

Both the origin and presentation of the bond proposals were unique. The need for an auditorium and a new library has been talked about by city officials and others for more than a decade. However, the specific referendum proposals started with several citizens groups including the Chamber of Commerce, the Wichita Symphony Society, and Civic Progress—a citizens' league.

The Public Relations Society of Wichita worked with a citizen committee to develop a fact sheet for general distribution and to plan an all-media information program. A speaker's bureau was set up. Newspaper, radio, and television information was prepared and Wichita's mass media lent support.

A new twist was the "precinct walking campaign" which buttonholed prospective voters to urge a "yes" for the bond issues. The "walks" were arranged after a check of past city elections. Voters thus contacted were those who lived in sections of the city which had voted no in previous referenda.

The information sheet was notable for:

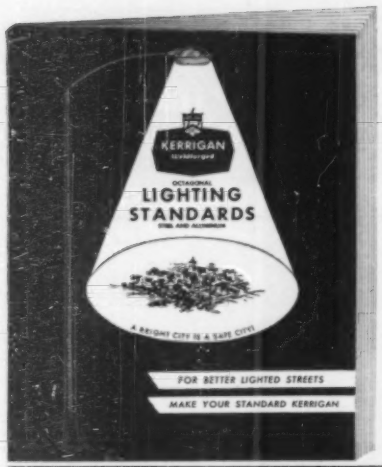
1. *Simplicity*—It was a one-page, legal-size sheet with double-spaced pica type back and front, produced in black ink on white paper and without any frills whatever. Information was given in question-and-answer form and most of the questions took just one line (so did many of the answers). The page obviously cost almost nothing; it was produced and used in quantity.

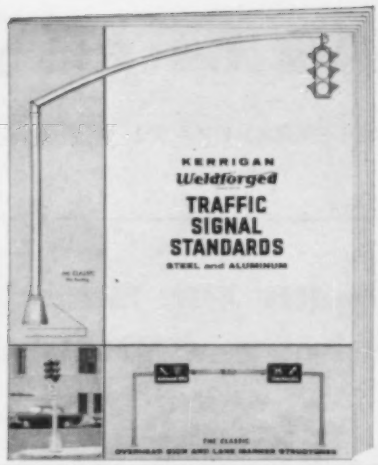
2. *Everyday talk*—The language of the fact sheet was straightforward. It talked down to no one but could be understood by almost anyone. For instance, one question asked if the issuance of the bonds would raise taxes. The answer. "No. These bonds will be issued at various stages of development. Outstanding bonds currently being paid off are scheduled to be retired at such times as to make it possible to issue new bonds without any increase in the present cost of paying off bonds. It's very much like the family budget: once we have paid for the refrigerator, we can begin buying other things we need."

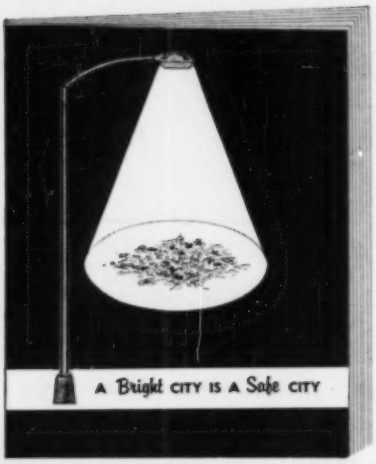
3. *Responsibility*—For the citizen who wanted to know, "Who is behind this drive for a new auditorium

(Continued on page 155)

It was standing room only in the City Commission meeting room at Wichita when Paul Kitch, standing left, president of the local chamber of commerce, asked the Board of Commissioners to call a referendum on a proposal to issue $15 million in bonds to build a new municipal auditorium and library. Most of those in the picture are representatives of community groups who supported such a bond issue. At the city staff table, foreground, left to right, are City Manager Frank H. Backstrom; City Attorney Fred W. Aley and Assistant City Attorney Lawrence Curfman.







LATEST CATALOGS

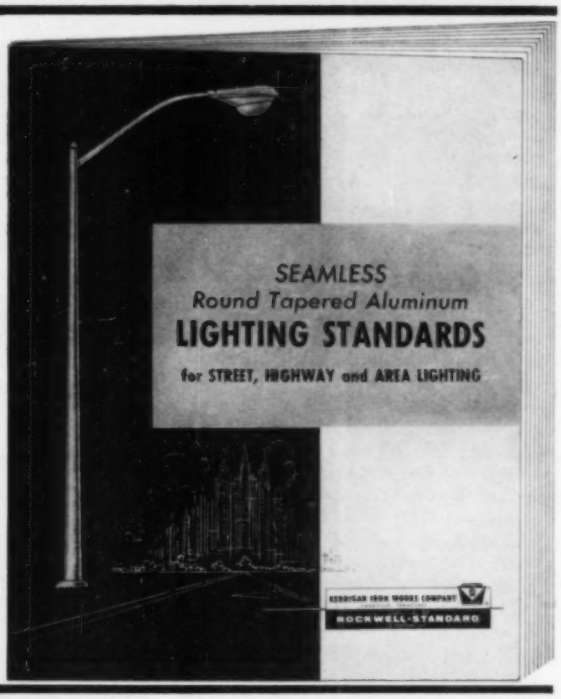
STREET AND HIGHWAY LIGHTING AND SIGNAL STRUCTURES

Here's aid for you in planning your street and highway lighting projects. Seven catalogs describe and illustrate (with full engineering data) our new line of attractive, round tapered aluminum shafts . . . . trim-tapered octagonal standards in steel and aluminum . . . . traffic signal structures . . . . strain poles . . . . brackets and mast arms . . . and overhead sign supports. All seven are available to you free. Send for your copies NOW. Brighten up YOUR city or town!

ADDRESS:
DEP'T. A-11

KERRIGAN IRON WORKS COMPANY
NASHVILLE, TENNESSEE
SUBSIDIARY OF
ROCKWELL-STANDARD
CORPORATION

STREET AND AREA LIGHTING AND SIGNAL STRUCTURES



(Continued from page 153)

and library?" there was this answer: "The list is growing daily. Many community organizations in Wichita have endorsed the bond issue. A partial list includes . . . " Then followed the names of 24 community groups, among them the PTA, Rotary, Kiwanis, Jaycees, Professional Engineers, Wichita Real Estate Board, the Federation of Labor, and several business and cultural organizations.

Selling Points

The what, why, when, where, and how are covered in the fact sheet. The following excerpts indicate some of the selling points successfully pushed in the campaign.

"What is it that we are planning to build?" was answered with: "The project we will vote for . . . will include these parts, as recommended by architects and planners who have studied our needs for years:

"1. A new municipal auditorium containing: a music hall to seat about 3,000; a convention hall to seat 8,000 to 10,000; a theater to seat about 1,500; 85,000 square feet of exposition space; adequate off-street parking.

"2. A library with capacity for half-a-million volumes, compared with a present overload of 160,000 volumes. To provide adequate seating for 500 persons instead of present capacity of 130. Adequate off-street parking."

Quite naturally, the next question was: "Where will the new civic center be located?" The fact sheet handles it without pinning down a specific site: "In the core area of downtown Wichita to make it convenient to hotels, new and present access streets and highways, and to the restaurant and transportation center of the city."

"Why do we need these new structures?" the fact sheet asked.

"A—We need a new auditorium so that we may bring great sports, entertainment, and cultural events to Wichita which now pass us by; so that we may attract conventions which will bring money to our community.

New Outlook

Wichita's successful referendum for the two new buildings dovetails with three studies which the Wichita-Sedgwick County Metropolitan Planning Department has underway: the center city study, a metropolitan economic study, and the transportation study.

Already a part of the civic center area is a new county courthouse. Contemplated, in addition to the library and auditorium, is a new building for the Wichita Board of Education and a new city hall.

Citizen spokesmen will continue to play an important role in center planning as members of the mayor's Council for Community Development. This council, representing all community segments, advises the Commission on community needs.

Manager Backstrom reports that "The Wichita Civic Center Auditorium and Library should be completed by 1965 or 1966. Added buildings should be underway by then and the center's construction is expected to stimulate related private building in the city's core area." He continues, "the elections have crystallized an optimistic and progressive community outlook. Wichita has gained considerable stature in the state and region as a result of this outlook."

For a copy of the Wichita fact sheet or additional information about the bond-issue campaign, write directly to: Frank H. Backstrom, City Manager, City Building, Wichita, Kansas. ◄◄

Sign Up for 1981 in 1961 with embossed

MIRO-FLEX STREET NAME ASSEMBLIES

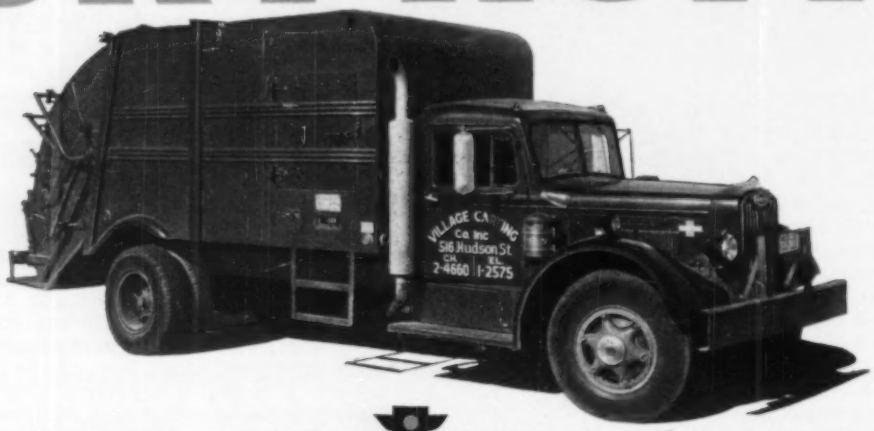
The solid, permanence of MIRO-FLEX street name assemblies takes nothing away from their functional, smart styling. Our 1981 skyline may change drastically but the MIRO-FLEX sign installed today will stand the wear of weather and the tenure of time. These tough, durable units offer snap-out legibility combined with the extra strength and rigidity of embossing. Made of zinc-coated, Bonderized steel with baked-on enamel finish. They can be reflectorized with moisture-proof beads or reflective sheeting. MIRO-FLEX signs are the finest buy in the traffic control sign field. Competitive makes are . . . rarely so attractive . . . never so enduring.

THE MIRO-FLEX CO., INC. 1824 East Second Wichita 14, Kansas

MS-1061

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.

CUMMINS POWERED FOR PROFIT



Do as Village Carting did, specify Stop & Go Diesels and increase your profits

"We cut fuel bills substantially when we repowered our unit with a Cummins Diesel and we cut our repair bills even more. We haven't had the Cummins in for a service check yet, and it has logged 5,000 hours," reports Pat Serra, owner of Village Carting Company, Inc., Staten Island, N.Y.

You, too, can give low cost service to your community, as Village Carting does, by powering with Cummins. Cummins Diesels idle four to five times longer than gasoline engines on the same amount of fuel. Engine life is typically three to four times longer. Cummins Diesels save you maintenance time and expense because they have no carburetor or electrical ignition systems, the major causes of gasoline engine trouble.

You'll start earning more profit the day you start a Cummins. Repower your present truck or specify Cummins in your new equipment. Eleven *Stop and Go* models are available from 70 to 160 horsepower. For more information read the sixteen page brochure "*Stop and Go* Diesels by Cummins." For your free copy, call your Cummins Distributor or write **Cummins Engine Company, Inc., Columbus, Ind.**

CUMMINS

The Practical Side Of Municipal Purchasing

By T. L. WEEKS
City Purchasing Agent
Charleston, S. C.

A purchasing agent has the delicate task of supervising negotiations for some $500,000 to $800,000 in goods and services in a way that advances the best interests of his city and avoids the threat of scandal because of favoritism or improper contracts. Inasmuch as this department has been in operation for 28 years and never once in that period has an accusation been raised about any irregularity in municipal buying, we feel that we have our procedure under good control.

A purchasing agent must operate so that those service departments calling on him will have confidence that a request will be filled promptly and that the goods will be delivered speedily. He also must assure the supplier that he will receive payment immediately, thus benefitting not only the supplier, but also the city that gets the advantage of cash discounts. Nevertheless, he must process each purchase in an orderly way, with requisitions that legally document each step.

After the supplier delivers the material, the purchasing agent has to check carefully the quantity and price, noting this on the purchase order, so that it can be approved for payment. If the material delivered by the supplier is different from the order, then the agent can change the advice sheet to agree with what is received.

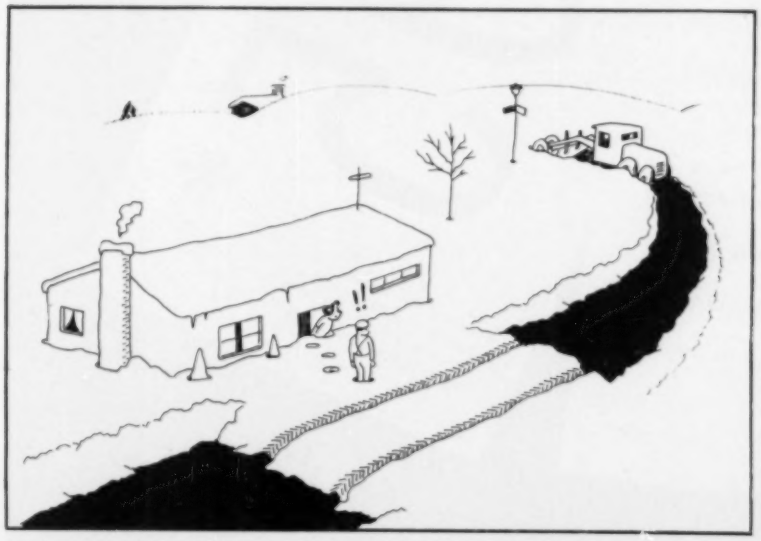
Each city department head has the right to submit to the purchasing agent a written requisition for needed supplies and materials. The agent then forwards these to the controller for his approval, appropriating the necessary money against the requesting department.

If the controller approves, as generally he will do, then the purchasing agent advertises in the newspapers three times as required by law, if the purchase is of any consequence or totals $500 or more. Otherwise he buys directly at the best possible advantage to the city. Enquiries are mailed only to out-of-town suppliers to make sure they do not miss the advertisement.

The city has a consistent policy of favoring local business firms whenever possible but will purchase from suppliers out of town if it can realize a substantial savings after freight and parcel-post rates are considered. In town, the city has a further consistent policy of dividing the city's business among all possible firms if the prices on quality goods are in line.

In an emergency, where an actual delay of a vital project is threatened, the city can acquire needed supplies directly from a firm, but this seller

(Continued on page 159)



"Rod must still be mad at you for beating him in the bowling tournament."

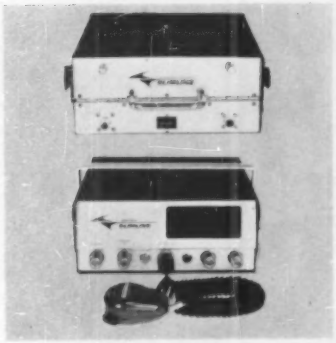
more run for your money!

WARN® HUBS on your 4-WHEEL DRIVE!

That goes double—more run for your money from your vehicle as well as the hubs. Your 4-wheel drive lives longer, handles easier, costs less to own, is more versatile with Warn Hubs, because they "cut out" the front drive in 2-wheel drive — stop drag, save gears, tires, gas. And Warn Hubs give you the utmost in "selective drive" convenience, dependability and satisfaction too, because they are *made* that way. Choose Warn Lock-O-Matics for automatic selective drive, or Warn Locking Hubs for the most dependable manual control hubs. You get more for your money either way.

Models for all makes 4-wheel drives. Ask your dealer for Warn Hubs next time you see him.

WARN MFG. CO.
Riverton Box 6064-AC
Seattle 88, Washington



MORE POWER: For greater range, full saturation coverage without dead spots. PRICE: Lower than the price of lower-powered equipment. That's the story told by the tickets. No other system can do your job better. No other system gives you as much power, more features, or more sensible optionals. NOTE: If you're already using mobile FM radio in the 10-30 watt category, you may add only the 100-watt amplifier and boost your power to full 100-watt output. For free descriptive literature, write today:

Aeronautical Electronics, Inc.,
P.O. Box 6527, Raleigh, N.C.

AEROTRON

A TALE OF TWO TICKETS

SPECIFICATIONS
AEROTRON SLIMLINE
100-watt Mobile FM Radio

1. **FULL 100-WATT OUTPUT**
(Only VHF 100-watt system available)
2. **INSTANT SELECTION OF NORMAL OR HIGH POWER OUTPUT**
(Only unit offering this feature)
3. **LOW BATTERY DRAIN**
(Has standby power-saver switch)
4. **TRANSISTORIZED POWER SUPPLY**
5. **2 OR 3 CHANNEL OPERATION***
6. **UNICALL*** (to guard against unwanted signals on same frequency)

*OPTIONAL

$595*

*Complete VHF system including antenna and other standard accessories. Also available in low band - $615. Amplifier alone $250. Prices slightly higher west of the Rockies.

(Continued from page 157)

has to obtain a numbered city purchase order, and his invoice must bear this number.

Cash discounts are important. The purchasing agent saves his city an average of $10,000 each month by following up every possible discount, and by receiving prices on gasoline that are the same as those granted the state of South Carolina.

Lowest Responsible Bidder

Getting a low price for your city on contractual bids means nothing if you get it from an unreliable supplier or you are buying an unreliable product. Over the years we have developed a careful method of appraising bidders to see that the best interests of our city are being served.

These are the pertinent points for which we look:

- **The ability, capacity and skill of the bidder, demonstrating that he can perform the contract or provide the service within the time specified.**
- **The quality, availability, and adaptability of the service or product supplied to the particular use required and whether it will be available at all times in case of replacement of stock; for example, if the product is water or sewer pipe, it must be adaptable to the climate and salt soil in this region, so that water and sewer service can be maintained without interruption. Otherwise we would not consider this supplier's bid, even though he might have been the lowest.**
- **The number and scope of conditions that the contractor or supplier attached to the bid.**

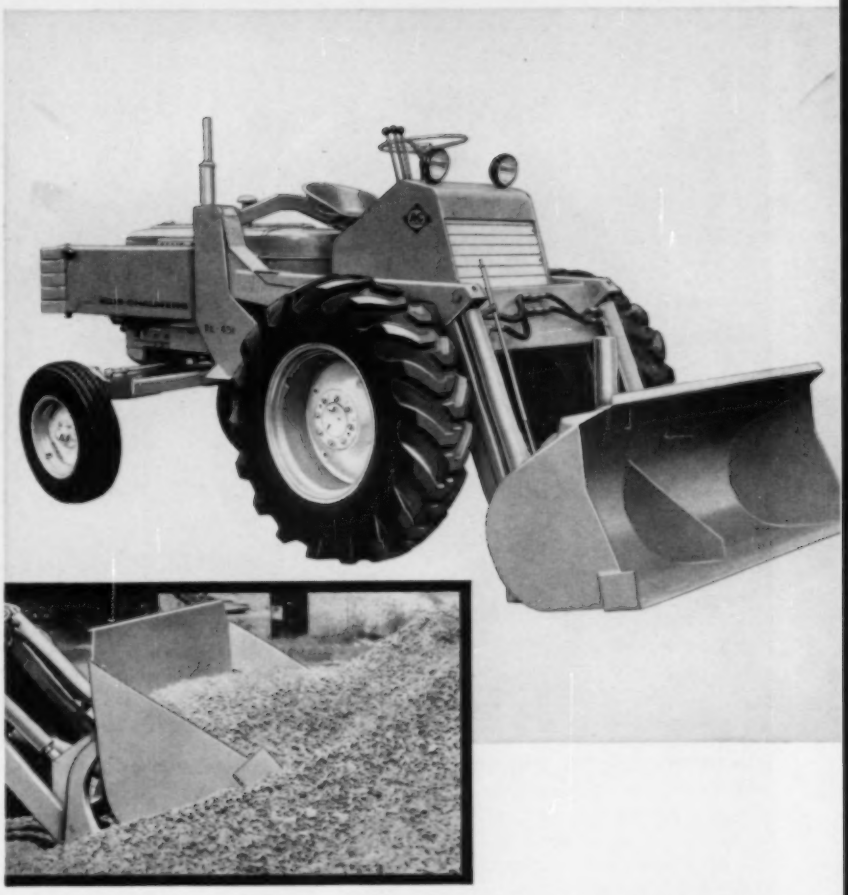
The actual award of the contract is the responsibility of the Ways and Means Committee of the City Council. This is made up of all the aldermen and the mayor.

Expansion

Last year, Charleston annexed several suburbs, taking in 30,000 to 40,000 people. This required us to build more fire houses and buy more equipment. We called for bids and purchased, last year, 20 cruisers for police, ten motorcycles, 15 refuse-collection trucks, three crash wagons and four fire engines. We also are in the process of laying sewer lines and building a million-dollar marina.

The purchasing department has to keep especially busy during this period of expansion. And we mean to see that Charleston gets the greatest value for the dollars spent during this period. ◄◄

Make loading time . . . PROFIT TIME!



"Third-cylinder" bucket action . . . a step beyond ordinary rollback . . . makes it easy as "falling off a log" to come up with a full bucket. And you do it time after time . . . putting up to 50 percent more material in the truck every cycle.

SHUTTLE Clutch lets you move into the pile fast, reverse swiftly and swing up to the truck . . . every movement controlled, continuous, accurate. No foot clutching or gear shifting.

Full loads in the 1-yard bucket are carried over the big wheels. Tires roll easily over rough terrain. There's flotation and capacity for big loads.

IT DOESN'T COST TO FIND OUT why this D-15 is the outstanding loose material unit. Call your Allis-Chalmers dealer or write Allis-Chalmers Mfg. Co., Utility Tractors and Equipment, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

SHUTTLE Clutch is available on the D-15 and the new H-3 and HD-3 crawlers.

INHERENT SPEED, PRECISION AND RUGGEDNESS distinguish the WILD T-1A for land, route, highway and mine surveys . . . day or underground. Automatic vertical collimation, readings direct to 20 seconds, estimations to 5 seconds, repeating with separate upper and lower motions, and built-in optical plummet make this instrument the preferred standard throughout the world.

WILD
HEERBRUGG

WILD T-1A OPTICAL REPEATING TRANSIT
Available with erecting image telescope Model T-1AE

One of a *complete* line of superb instruments for Surveying, Photogrammetry and Microscopy. *Write for BookletT-1A.*

WILD HEERBRUGG INSTRUMENTS, INC. • PORT WASHINGTON, NEW YORK
In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario

If You Have Airport Problems

If your city is worrying about jet ports or the feasibility of any other airport problem, the Federal Aviation Agency (FAA) wants to help, and will make available material that it has developed. For example, FAA has:

- **research programs designed to forecast what kind of aircraft and how many will serve each community in this country. It is moving to relate these to the size and type of airport that will be needed—how much land will be required.**
- **a new publication, "Longest Airline Nonstop Flights." This, together with complementary engineering formulas, helps in the determination of runway lengths and strengths.**
- **a recent study, "Economic Planning for General Aviation Airports." This helps to determine where airports should be located and what size they should be.**
- **studies—it is a continuing study—of the noise problem of airports. It has published the planning guide "Airport Noise Abatement." This provides technical guidance and means by which planners can discourage the sort of development around airports that is most seriously offended by the noise of jets.**
- **developed a model zoning ordinance to serve as a guide for local airport authorities.**

Joseph H. Tippets, Director, Bureau of Facilities and Material, listed these aids at the recent meeting of the American Society of Planning Officials in Denver. ◄◄

Identical Salt Bids Go In Milwaukee

Apparently the federal grand jury's investigation of bid rigging has had its effect in Milwaukee, reports City Purchasing Agent Andrew L. Lehrbaummer. For the first time in many years, this city opened bids on its rock salt requirements for one year and did not receive identical bids. The low bidder, a major salt producer, quoted $13.80 per ton, which includes delivery to distribution points throughout the city.

This is conspicuously lower than any of the previous contracts awarded after identical bids during the last ten years; during that time the price varied from $15 to $18.50 per ton. ◄◄

You get 30% more working range with Holan's NEW MV-50 ELBOW

Holan's new MV-50 Elbow gives you 30% more working range than limited action* aerial arms using other types of bucket suspension.

Secret of the added working range is the offset yoke (patents applied for) and the bucket suspension design. The roomy two-man bucket pivots on the center line of the center of gravity inside the yoke.

Add the 85° lower arm/135° upper arm travel and continuous rotation to the yoke and suspension design and you have an Elbow that will lift workmen to a wide variety of working positions . . . reach over parked cars, over and between power and telephone lines, and up the property side of the pole.

Everything about the MV-50 is safe. Insulation of the bucket, yoke and upper arm is adequate for working up to 345,000 volts (A.C.). And it can be fitted with Holan's exclusive metal shielding kit for bare hand work on live high-voltage lines.

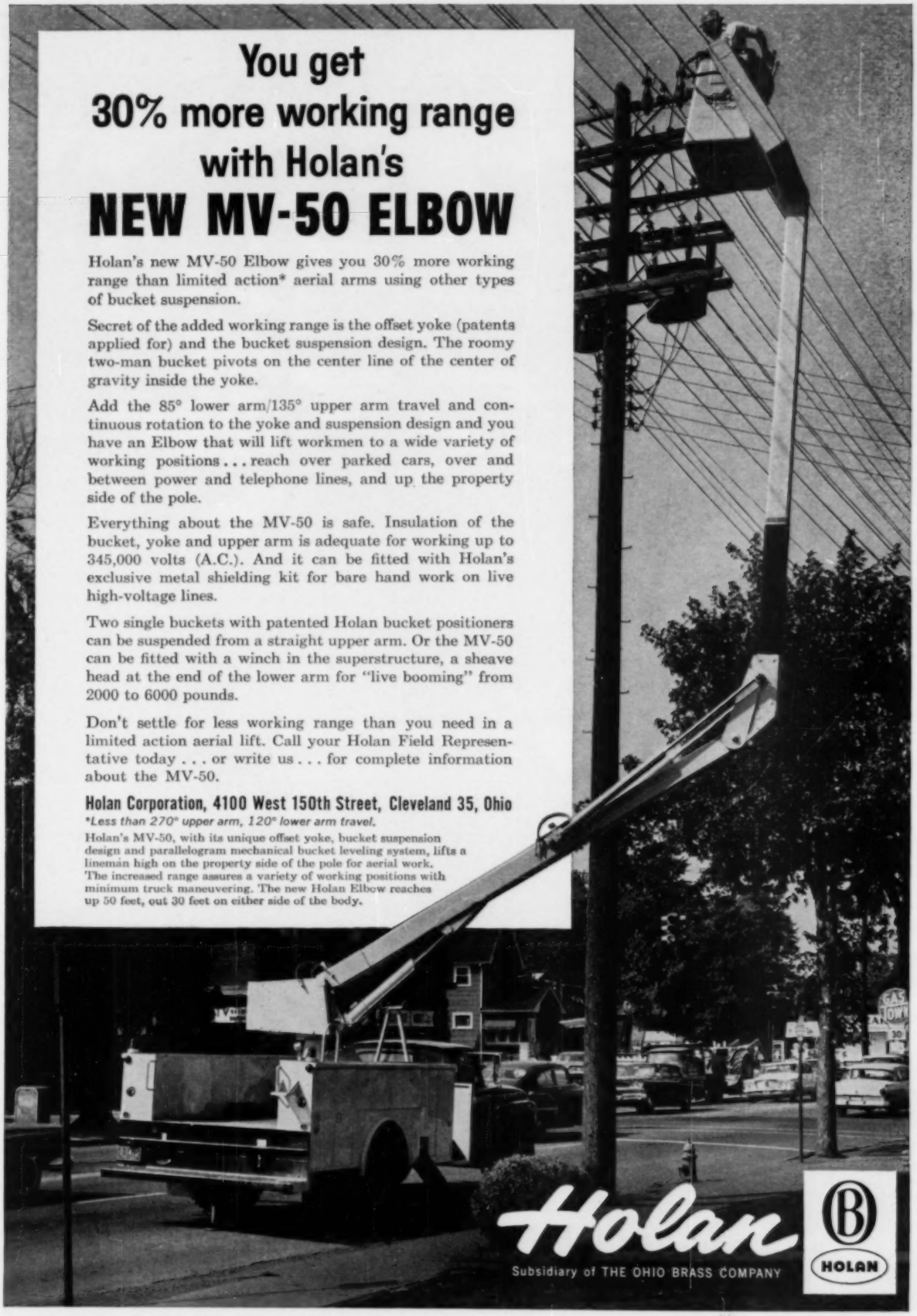
Two single buckets with patented Holan bucket positioners can be suspended from a straight upper arm. Or the MV-50 can be fitted with a winch in the superstructure, a sheave head at the end of the lower arm for "live booming" from 2000 to 6000 pounds.

Don't settle for less working range than you need in a limited action aerial lift. Call your Holan Field Representative today . . . or write us . . . for complete information about the MV-50.

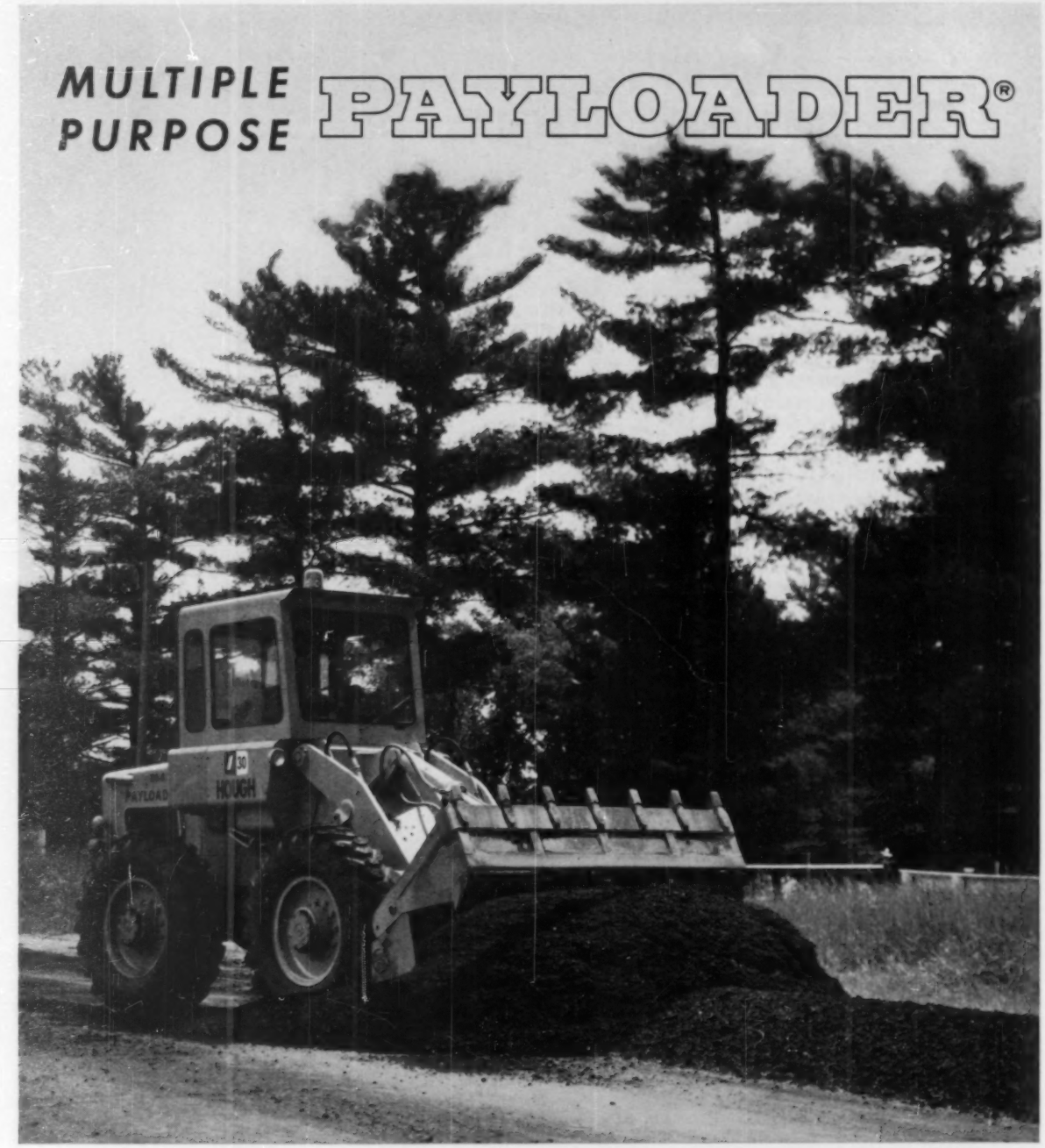
Holan Corporation, 4100 West 150th Street, Cleveland 35, Ohio

**Less than 270° upper arm, 120° lower arm travel.*

Holan's MV-50, with its unique offset yoke, bucket suspension design and parallelogram mechanical bucket leveling system, lifts a lineman high on the property side of the pole for aerial work. The increased range assures a variety of working positions with minimum truck maneuvering. The new Holan Elbow reaches up 50 feet, out 30 feet on either side of the body.



MULTIPLE PURPOSE PAYLOADER®



Sanitary Landfill A PAYLOADER can dig the trench, spread and compact the refuse, carry and spread cover dirt.

Blacktop Loading is a fast, efficient PAYLOADER task — from either piles or windrows.

Sweeping Pick-up Sweeper attachment is valuable for general sweeping, also for recovery of excess sand after topping.

ASSURES A FULL WORK LOAD ALL YEAR

When you invest in a PAYLOADER you can be sure that you can keep it busy and productive every month of the year. That's because it has all-season 4-wheel drive traction and can move quickly to and from work sites and between job assignments. And most important of all is its proven versatility or work-ability — the many kinds of jobs it can do.

In fact the record of versatility and accomplishment and reliability established by PAYLOADER units in public works service through the years is a long and enviable one. So much so that many experienced public works officials consider them almost as important as dump trucks in their equipment pools.

A PAYLOADER tractor-shovel has an even greater tax-saving potential for construction and maintenance operations when consideration is given to the many optional attachments available for it, such as:

Drott "4-in-1" Bucket — greatly expands the variety of jobs a PAYLOADER can do — enables it to pick up small piles cleanly; to grasp, move and load slabs, curbstones, stumps and logs; to strip sod, grade or to bulldoze.

Wain-Roy Backhoe, Rotary, "V" and Blade Snow Plows, Ram Pick-up Sweeper and Ram Blacktop Spreader, are some of the other optional attachments that can pay extra dividends to the public body owning a PAYLOADER.

Your PAYLOADER Distributor with his long experience in the application of rubber-tire tractor-shovels — and with the most complete and most proven line — is ready to help you select the size and model that best fits your particular needs. He also has the finest service and parts facilities in the industry, backed by Hough field service personnel.

Snow Fighting Load it out with a bucket or plow it with Rotary, "V", or Blade plow attachments.

Ditch Maintenance PAYLOADER with regular or "4-in-1" Bucket, or Backhoe can dig and clean out roadside ditches.

Pavement Removal is a common PAYLOADER job, with or without prior breakage, depending on condition of old pavement.

Land Clearing PAYLOADER, with "4-in-1" Bucket — a popular combination for grubbing, clearing, loading stumps, trees, stones.

Trenching PAYLOADER with Backhoe attachment can dig trench, handle pipe and fittings, backfill, load excess dirt.

Clean-up — either routine or emergency — is a PAYLOADER "natural" as it can go anywhere it's needed in a hurry.

HOUGH®

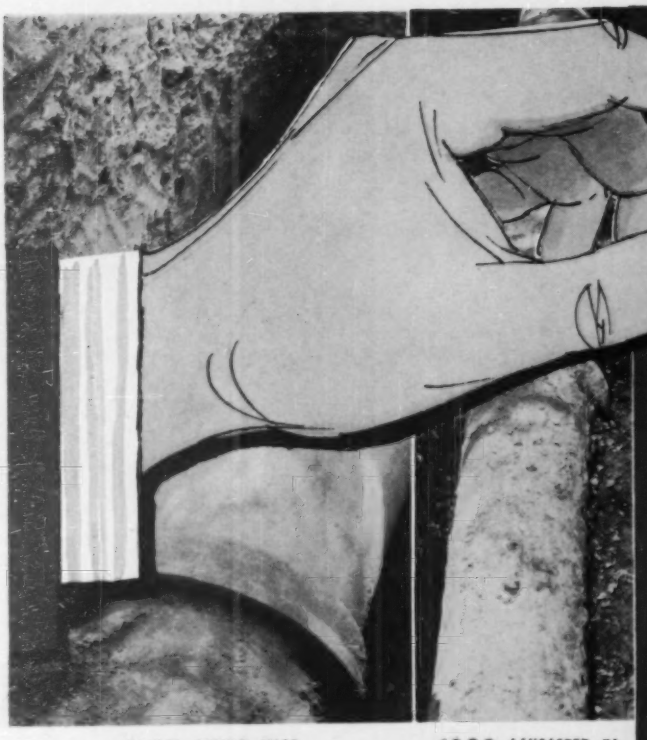
THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

THE FRANK G. HOUGH CO. 11-B-6
710 Sunnyside Ave., Libertyville, Ill.

Send full data on PAYLOADER models and attachments for public works use.

Name
Title
Dept.
Street
City State



PERMANENT CAST IRON PIPE

Has Saved Many Millions for American Communities

1847 BOSTON, MASS. Water Main

1836 LANCASTER, PA. 12" Water Main

1834 READING, PA. 4" Water Main

1830 PHILADELPHIA, PA. 6" Water Main

1858 NEW ORLEANS, LA. 4" Gas Main

1834 POTTSVILLE, PA. Water Main

1831 RICHMOND, VA. 8" Water Main

CAST IRON PIPE has earned its reputation as "Public Tax Saver No. 1" by saving replacement of mains which would have been necessary if shorter lived substitute pipe had been used.

Chief reasons why Cast Iron Pipe is "Public Tax Saver No. 1" are these:

Its Century or More of Useful Life. The proved useful life of Cast Iron Pipe is at least double the estimated life of other pipe materials used for underground mains.

Low Maintenance Cost ... far below that of any other pipe material that has been in use long enough for the recording of conclusive data. This is because of its effective resistance to corrosion by oxidation and its wide margin of safety in strength to withstand impact, beam and crushing stresses.

Re-Use or Salvage Value. Because it can be taken up and relocated, Cast Iron Pipe serves out its full useful life in its original location or elsewhere.

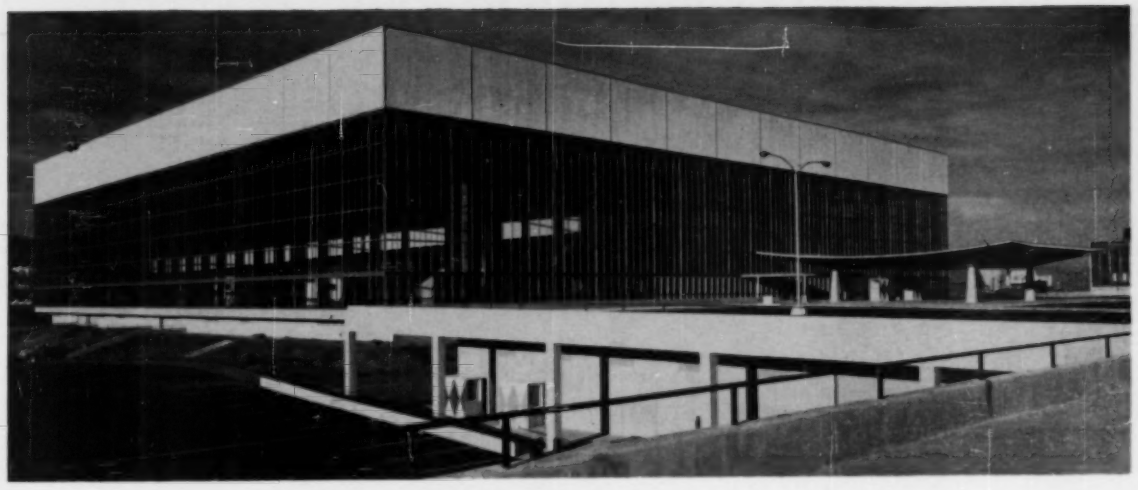
If your community expects to grow, the time is now to plan ahead for enlarged Cast Iron water mains and sewers that will provide efficient and dependable service for a century or more at lowest maintenance cost.

This advertisement is published in the interests of the Cast Iron Pressure Pipe Industry by ...

WOODWARD IRON COMPANY

Since 1882

WOODWARD, ALABAMA



Portland, Ore., builds a memorial coliseum to standards that show . . .

What a Good Auditorium Needs

By **DON JEWELL**
Manager
Memorial Coliseum

A successful municipally owned coliseum or auditorium:

- **Provides facilities for events of community-wide benefit not otherwise available.**
- **Has adequate power and lighting.**
- **Operates under an administrative set-up that retains proper control by the executive branch of the city government while keeping the operational decisions free of political influence.**

The Memorial Coliseum in Portland, Ore., satisfies those requirements, due to ample preliminary investigation and study.

The building measures 360 by 360 feet in area. The outer walls contain 80,000 square feet of windows. Inside this glass enclosure is placed the column-free seating bowl and arena.

Immediately adjoining it at arena floor level is the 52,650-square-foot Exhibit Hall. This huge room extends underneath the main spectator entrance walk-ways and part of the east parking lot. Space for approximately 2,000 parked cars has been provided around the Coliseum.

The City of Portland community has not had until now facilities for large gatherings. The arena accommodates up to 13,000 people, and its eight meeting rooms accommodate 2,000 more.

This seating bowl has approximately 9,000 permanent theatre-type seats. Temporary seats can be added.

Imbedded in the arena floor are pipes to convert the concrete apron into an 185-by-87-foot ice arena. This change can be effected in less than 24 hours and it takes less than two hours to remove the ice and all equipment.

For other sporting events, the planners provided portable equipment that is easy to install and take down. Complete equipment of this sort is available for basketball, boxing, track.

Convention Equipment

The arena is equally well equipped for conventions and stage productions. One item here is a large portable platform about 32 by 64 feet, for conventions and similar meetings. Another is the Coliseum's unique new portable 32-by-64-foot stage designed especially for it. It is the only one of its type in the country.

The Coliseum roof is supported by four concrete columns, 70 feet high, spaced 240 and 270 feet apart. They cantilever 100 feet off the foundations and form the rectangle inside which the seating bowl is placed. The roof extends 45 to 60 feet beyond the columns and requires no support from the outside walls.

This construction gives an arena with no columns to obscure the view.

Unimpeded visibility was also considered in designing the lighting system. Located in the acoustical ceiling, 65 feet above arena floor level, is an array of floodlights and spotlights equal to any lighting requirements that may confront the Coliseum's management.

For sporting events such as hockey games or boxing matches, the full power of the arena's 236 1,000-watt floodlights is brought to bear. Focused on the ice arena, they deliver 100 footcandles.

A major shortcoming of most arenas throughout the country, the preliminary survey disclosed, is absence of sufficient power blocks to accommodate certain types of displays, shows, and performances. Heavy equipment demonstrations, for instance, need heavy electrical loads. And the Exhibit Hall with its space for 300 standard-size exhibit

(Continued on page 167)

WHEELER HYDRAULIC PIPE CUTTER

A Top Performer even under water

NOT A STUNT, BUT AN ACTUAL CASE WHERE THE WHEELER HEAVY-DUTY HYDRAULIC WAS USED IN AN EMERGENCY SITUATION.

An eight inch cast iron water main serving the town of Cascade, Idaho developed a leak six feet below the floor of Cascade reservoir. Skin divers who repaired the break worked under extremely difficult conditions. Water pressure at the break blew out a narrow trench which allowed space for just one man to operate the cutter. Although further hampered by zero visibility, due to the muddy water, the divers accomplished two cuts in fifteen minutes.

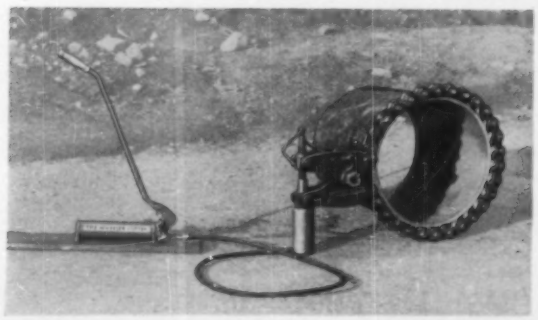
Skin divers Rex Krieger (left) and Darwin Ames, members of the Boise Hell Divers club, are shown with the Wheeler cutter at the scene of their emergency repair job. (photo courtesy The Idaho Statesman)

While we do not recommend frequent use of this tool under water, this factual incident demonstrates its durability and dependability.

Cutting capacities of the Wheeler Heavy-Duty Hydraulic

- Std. or XH Soil Pipe—All Sizes
- Terra Cotta or Tile Pipe—thru 36"
- Cast Iron Pressure Pipe—4" thru 10" ASA class 26
- Cast Iron Pressure Pipe—4" thru 12" ASA class 22
- Asbestos Cement Pressure Pipe

Cut 10" THRU 20" cast iron water main with the new Wheeler "SUPER" hydraulic



The Wheeler "Super" Hydraulic is readily installed on the pipe by two men and the pipe is then quickly and easily cut by one man in just seconds.

All you do is wrap the chain around the pipe, engage it in the cutter's upper jaws, adjust the slack out and operate the pump.

WHEELER MANUFACTURING CORP., **BOX 688, ASHTABULA, OHIO**

(Continued from page 165)

booths, draws large loads of power.

In the Coliseum, the planners installed facilities to deliver 3,750,000 watts. Space is provided for additional transformers with 2,000,000 watts capacity.

A feature of interest is the one-man electric elevator mounted inside one of the four roof-support columns. Running from arena and concourse floor level up the ceiling catwalk, it makes it possible for lighting and maintenance men to get quickly up to the 65-foot high level. The other three columns have ladders inside, for more strenuous ascents.

The air-conditioning system provides a constant inside temperature of 75 degrees winter or summer. Sixteen fans with a capacity of moving 160,000 cubic feet per minute can change the air in the entire arena in less than 15 minutes.

Another major installation is the high-fidelity speaker system which has both a high- and low-level sound system. The former uses 32 high-fidelity speakers, while the latter has 20 speakers.

The group responsible for successful operation of the Coliseum are the members of the Exposition-Recreation Commission. These men are appointed for five-year terms by the mayor of Portland, subject to the approval of the City Council.

The Coliseum was authorized originally in 1954 by vote of the people of Portland. Between that day and the breaking of ground in February 1959 were over four years of frustration for the planners of the project. Those frustrations could have been avoided by inclusion of one provision in the original enabling act: specification of the site.

The Coliseum operates within the economic framework established by the act of 1954. This authorized a bond issue of $8 million in general-obligation bonds, about $5 million for the building and something over $2 million for the land. No provision has been made for further operating expenses since the Coliseum is expected to pay its own way.

We are most hopeful that it will be able to do so and the busy schedule already lined up ahead of us gives further assurance that this may turn out to be the case. ◄◄

Building Officials Learn—

—that plastic plumbing and prefabricated panel construction using material such as csbestos cement, is on the way.

Ralph J. Johnson, director of research for the National Association of Home Builders, will not pin down the exact date when these will become the common practice; but he does say that home building has changed more in the past decade than in the preceding 2,000 years.

—that building codes need revision to meet civil defense fallout shelters.

Harry Lobitz, Jr., director of Shelter and Design Construction, OCDM, Battle Creek, Mich., warns that strict interpretation of most building codes presents obstacles to the construction of CD shelters.

—that supermarkets should eliminate one-way turnstiles as checkout counters and double the number of exits in large food markets.

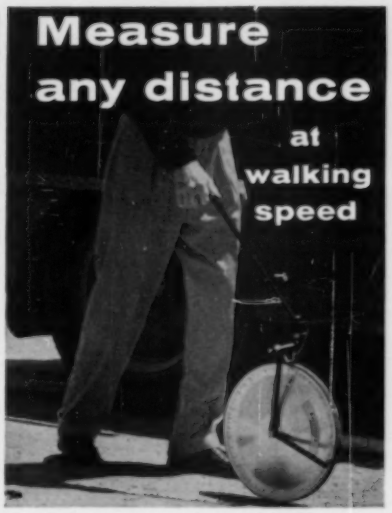
Both these changes provide greater safety for shoppers and employees. The Building Officials Conference of America (BOCA) has revised its standardized code to include these features. The new code also requires those who have installed automatic doors at entrances and exits to change them so that they will operate both inward and outward.

—that mobile homes deserve to be placed on a par with ordinary permanent dwellings.

The new BOCA code requires 70 square feet of floor space for each person living in a mobile home and a generous amount of land surrounding each home. Travel trailers, which are smaller than mobile homes, also meets the approval of building officials. The change limits these units to not more than 48 hours of parking in one location outside an approved trailer park. However, they will not be accepted for permanent occupancy unless they conform to the code.

These points evolved at the recent meeting of the Building Officials Conference of America held in Philadelphia and chairmanned by Barnet Lieberman, commissioner of licenses and inspections of that city.

The building code developed by this group currently has been adopted by over 430 cities. Benjamin Saltzman, borough superintendent, Department of Buildings, Brooklyn, N. Y., was elected president of BOCA; Albert P. Backaus, director of Maryland's Department of Public Improvement, is the new first vice-president; Verner L. Lane, building commissioner, South Bend, Ind., is second vice-president; Norman E. Schmidt, director of building, Evanston, Ill., is secretary. ◄◄



records 100,000 ft.
automatically!

It's So Easy to measure with a Rolatape . . . and you save time on every estimating job . . . no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Rolatape
Measuring Wheels

WHEN
IT
SNOWS...

are
your streets
only
this
wide...

when
they
should
be
this
wide?

ONLY a snowblower
can clean your streets
full width . . . cast snow
where you want it . . .
avoid clogged driveways,
plowed-in hydrants . . .
and do the job quickly,
efficiently and
economically.

SICARD has been
building and improving
snowblowers,
large and small,
for more than 30 years.
Look to Sicard—
the original name
in snowblowers—
for the finest snow removal
equipment made . . .
a complete line ranging
from the detachable
tractor-mounted
BB blower to the mighty
Snowmaster Senior.

Drop us a line for
descriptive literature.

SICARD

SICARD INDUSTRIES, INC.
753 West Main St., Watertown, N.Y.
Telephone Sunset 2-4600

3057-A

1961 Aid-to-Education Award Presented to Frank P. Palumbo, Jr.

The 1961 Aid-to-Education Award, sponsored by THE AMERICAN CITY and administered by the American Public Works Association, went to Frank P. Palumbo, Jr. Mr. Palumbo completed 3½ years of accredited college work at Arkansas State College, Christian Brothers College, and the University of Tennessee. He is 31 years old and married.

Mr. Palumbo joined the Memphis, Tenn., Department of Public Works staff as a draftsman in 1951 and now holds the position of Engineer of Surveys, Plans and Design. He will use the $1,000 to continue his studies toward a degree in civil engineering.

The purpose of the award is to provide financial assistance to deserving senior students and graduates of accredited engineering schools who desire to continue their education in preparation for careers in the public-works field. A special committee, appointed by the president of the APWA, selects the award recipient on the basis of a rating system which takes into account scholastic capacity, personal qualities, and the relative excellence of a paper written on some subject pertaining to public works. Mr. Palumbo's paper described the design and construction features of the Southern Avenue overpass structure in Memphis, Tenn., a project in which he took an active part.

President Frederick W. Crane appointed the following men to serve on the 1961 Aid-to-Education Award Committee: E. L. Filby, Black & Veatch, Consulting Engineers, Kansas City, Mo.; Arthur D. Bird, City Engineer, Cincinnati, Ohio; and Fred Glendening, Director of Public Works, Phoenix, Ariz.

APWA Elects Officers, Presents Awards

Albert G. Wyler, director of streets, New Orleans, took over the reins as president of the American Public Works Association at the Association's 67th annual Congress and Equipment Show held in Minneapolis, Minn. Wyler, a veteran of more than 35 years with the City of New Orleans, succeeds Frederick W. Crane, general manager of the Buffalo, N. Y., Sewer Authority.

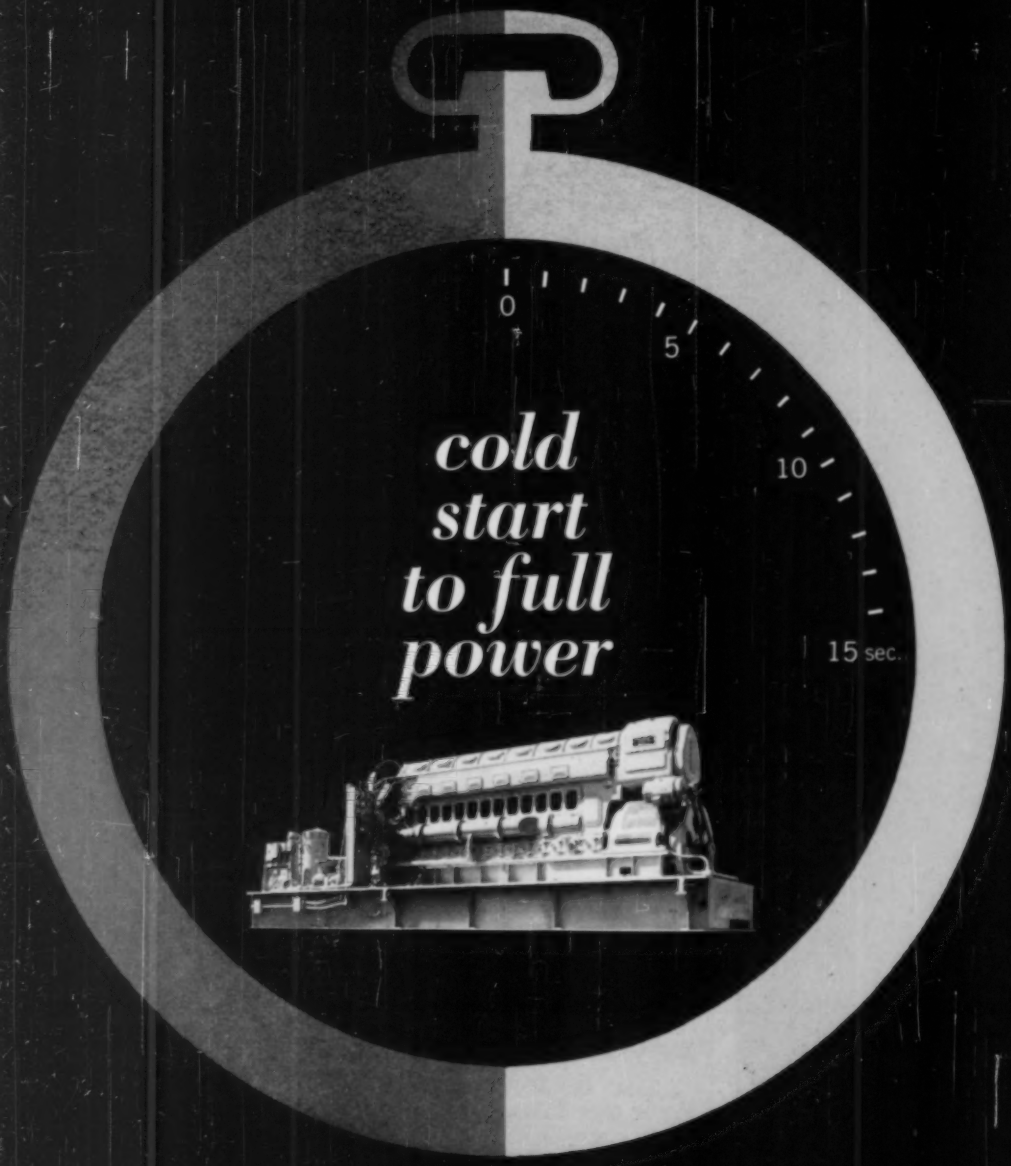
The Association members elected Edward J. Booth, city engineer, Bismarck, North Dakota, as vice-president for a one-year term. Mr. Booth was instrumental in founding the North Dakota Chapter and has served on the APWA board since 1957.

New members of the board of directors are Lloyd Knapp, commissioner of public works, Milwaukee, Wis.; John Lambie, county engineer, Los Angeles, Calif.; and Roy W. Morse, city engineer, Seattle, Wash.

The Harry S. Swearingen Award went to Carl C. Fagerlind, street commissioner, Waterloo, Iowa, for his efforts in promoting the aims and objectives of the Association in Iowa. He served as the first Iowa Chapter president and was a leading force in founding the chapter.

E. F. Muckelroy, superintendent of the department of sanitation, El Paso, Texas, and Abraham Michaels, deputy street commissioner in charge of sanitation, Philadelphia, Pa., were co-recipients of the Charles Walter Nichols Award and will share the $500 honorarium which goes with the award.

The Association presented an Honorary Membership to Harmer E. Davis, director of the Institute of Transport and Traffic Engineering at the University of California, and chairman of the Highway Research Board. He received the award for his outstanding record of leadership and achievement in the field of street and highway engineering, management and research and for his contributions to education. ◄◄



...15 seconds with Fairbanks-Morse Diesels

The F-M 38D8⅛ Opposed-Piston Diesel Generating Unit—with only 15 seconds *from cold start* to full power—gives fast, sure power for peaking or for standby use, together with impressive operating economies.

This unit requires no spinning reserve . . . uses no power until it starts, then produces up to 2500 kw per unit. Can be linked in multiple units.

Dependable? Service records of F-M Diesels prove dependability beyond a doubt (F-M pioneered the manufacture of diesels in America . . . has kept in the forefront ever since.)

Economical? The 38D8⅛ has 40% fewer moving parts than comparable engines of equal horsepower. This means reduced maintenance costs . . . fuel and lube oil savings.

Opposed-piston design minimizes vibration, produces fine balance . . . smooth power and instant response that result in 15 second full-power operation. Available with 4, 5, 6, 8, 10 or 12 cylinders, ranging from 450 to 2500 kw per unit, with automatic or manual controls. **For full details or custom specifications, write today to: S. K. Howard; Director of Marketing; Fairbanks, Morse & Co.; Beloit Division; Beloit, Wisconsin.**

FAIRBANKS MORSE
A MAJOR INDUSTRIAL COMPONENT OF
FAIRBANKS WHITNEY

Some Typical Rates

Just as a startled pheasant jumping up in a field of hunters draws fire from several directions, so does the common goal of paying for a sewerage facility attract diverse types of ordinances from those cities which levy sewer service charges.

If we agree that the sewerage works should function as a self-supporting utility similar to most water departments, the route to this end remains wide open. Although practically all water utilities charge for their product on the basis of the amount used, sewer-service charges show a more nearly equal division between the metered and flat rate basis.

Ames, Iowa, assumes, as do many cities, that the amount of sewage contributed is nearly equal to the water use and bills for this service on the basis of the water meter reading. The rate schedule contains four blocks which decrease with increasing volume.

Circleville, Ohio, chooses a different method which results in equal charges for each dwelling and apartment. An elaborate schedule lists additional fees for various classes of users based on their facilities. Where industries discharge wastes of unusual strength or composition, the city establishes fees by a separate ordinance. Other cities, of which Cleburne, Texas, is one, assume that the number of fixtures is an indication of use and charge accordingly.

These few examples indicate the variety of means which cities use to determine sewer-service charges for individual users. No matter which method an ordinance specifies, knowledgeable officials should make certain that it is equitable. If they do not, the courts, on application, will order them to do so. ◄◄

AMES, IOWA

Rates Per Month

Cubic Feet	*Per 100 Cubic Feet*
First 500	$.20
Next 500	.16
Next 4,000	.14
All over 5,000	.10

The minimum charge is $1. The Department of Agriculture's National Animal Disease Laboratory pays $265 per 1,000,000 gallons plus .8 cent per pound of BOD plus 1.6 cents per pound of suspended solids. Iowa State University pays a share of operating costs in proportion to flow.

Related Information

Population	27,003
Population served by sewers	27,003
Average flow, mgd	2.75
Annual sewer-service charge revenue	$146,858
Distribution of revenue:	
Plant operation and maintenance	$83,039
Sewer maintenance	11,025
Sewer bond retirement	42,000
Reserve	10,794

Remarks

One monthly bill includes both sewer-service and water charges. In 1950, the standard-rate trickling-filter treatment began. Four years prior to that residents began paying sewer service charges to finance sewer maintenance and some construction. Rates doubled in 1958 to provide funds for extensive sewer construction.

HARRIS SEIDEL
Superintendent
Water and Sewage Treatment Plant

ANOKA, MINN.

Rates Per Month

The minimum bill is $1.00. The unit rates are:

Cubic Feet	*Per 100 Cubic Feet*
First 600	$.13
Next 600	.104
Over 1,200	.052

Related Information

Population	10,562
Population served by sewers	10,100
Annual sewer-service charge revenue	$42,000
Distribution of revenue:	
Plant operation and maintenance	$22,000
Interceptor sewer maintenance	10,000
Construction and bond retirement	10,000

Remarks

The sewer-service charge appears on the same bill with the water charge. The plant incorporates high-rate trickling filters. It is now five years old. The sewer-service charges began upon completion of the plant. There are no special agreements with large sewage contributors. There is no discount or penalty for early or late payment.

H. GRINDY
Superintendent
Sewage Treatment Plant

BETHEL PARK, PA.

Rates Per Quarter

Gallons	*Per 1,000 Gallons*
0 to 1,000	$12.00
1,000 to 100,000	.30
Over 100,000	.28

The minimum bill is $12.

The charges listed above apply to normal domestic sanitary sewage ranging between 6.0 and 9.5 in pH, containing less than 250 ppm of suspended solids, requiring a chlorine demand of less than 50 ppm, having a BOD of less than 250 ppm and being comparatively free of grit and mineral solids.

In addition to prohibiting wastes containing more than specified amounts of nine different chemical substances, the ordinance restricts the discharge of:

Any liquid or vapor having a temperature higher than 150°F;

Any water or waste which may contain more than 100 parts per million, by weight, of fat, oil, or grease;

Any gasoline, benzene, naptha, fuel oil, or other flammable or explosive liquid, solid or gas;

Any garbage that has not been properly shredded, and not shredded to such degree that all particles will be carried freely under normal sewer flow conditions and with no particle greater than one-half (½) inch in dimension;

Any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure, or any other solid or viscous substance capable of causing obstruction to the flow in sewers or other interference with the proper operation of the sewage works;

Any waters or wastes having a pH lower than 5.5 or higher than 9.0, or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the sewage works;

Any waters or wastes containing a toxic or poisonous substance in sufficient quantity to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals or create any hazard in the receiving waters of the sewage treatment plant;

Any waters or wastes containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the sewage treatment plant;

Any noxious or malodorous gas or substance capable of creating a public nuisance.

Related Information

Population	23,606
Number of customers billed	6,300
Average flow, mgd	1.5
Plant construction cost	$2,700,000

Remarks

The plant, constructed in 1959, provides biological treatment of the waste. The sewer service charges began in 1958. The ordinance provides that the borough must use all receipts from sewer-service charges for some phase of sewerage works. Where residents use private wells, they must install meters to indicate the amount of sewage contributed. Although the rates are on a quarterly basis, the borough bills users monthly. The first two bills of the quarter are estimated amounts; the final one, based on meter readings, corrects the quarterly total.

THOMAS KENEAVY
Superintendent
Sewage Treatment Plant

CIRCLEVILLE, OHIO

Rates Per Year

(Billed quarterly)

Dwelling or apartment	$9.60
Hotels and Motels	
Each room with bath	2.80
Each room without bath	1.60
Each public toilet	12 80
Rooming Houses	
Each, minimum charge	9.60
Plus, for each rental room	1.60
Filling Stations, Garages and Offices	
Toilets, each	9.60
Wash racks	12.00

(Continued on page 173)

BIF POSITIVE CONTROL OF MATERIALS FLOW

"$25,000 PER YEAR SAVED!"---City "A"

"MORE IMPORTANT TO US THAN SAVINGS WAS INCREASED OPERATING EFFICIENCY RESULTING IN IMPROVED SERVICE AND CUSTOMER RELATIONS!"---City "C"

"AMORTIZED IN 26 MONTHS!"---City "B"

Dependable Transistorized **B-I-F** *Supervisory Control Cuts Operating Costs of Widespread Systems*

"$25,000 per year saved" and "Amortized in 2 years and 2 months" . . . typical testimonials received from the many municipalities using B-I-F supervisory control systems . . . names upon request. Systems range in size from relatively compact layouts to operations spread over 100 square miles with more than 200 stations, valves and similar functions to control.

One operator, at a centralized control panel, knows instantly when irregularities occur at distant points . . . takes immediate corrective action. Report-back verifies that a valve is open or closed, that a particular pump has started or stopped, or that . . . through visual indication . . . the desired function is correctly recorded.

B-I-F Supervisory Control Systems employ many advanced, but performance-proved techniques to provide centralized control at low operating cost. Dependable, safe system reduces equipment costs, operating costs . . . provides for low cost system expansion.

Request Bulletin 0240.20-3 for complete details. Write B-I-F Industries Inc., 463 Harris Ave., Providence 1, R. I.

BIF **Industries**

A DIVISION OF THE NEW YORK AIR BRAKE COMPANY

METERS • FEEDERS • CONTROLS / CONTINUOUS PROCESS ENGINEERING

Modern Sewer-Service Rates

(Continued from page 171)

Trailer Courts and Trailers	
Each court, minimum charge	9.60
Each sewer connection for trailer	6.00
Bath house and/or toilet	12.00
Laundry	12.00
Barber and Beauty Shops	
Toilets, each	9.60
Barber or beauty chair, each	3.00
Factories and Shops	
Minimum charge	12.00
For each employee	1.00
Clubs and Lodges	
Toilets, each	4.00
Kitchen sinks, each	4.00
Slopsinks, each	3.00
Churches	
Parsonage, only	9.60
Hospitals	50.00
Stores, Restaurants, Mercantile	
Private toilet	9.60
Public toilet	12.80
Kitchen sink	9.60
Slop sink	3.00

Related Information

Population	11,091
Population served by sewers	10,000
Average flow, mgd	1.5
Annual sewer-service-charge revenue	$49,000
Distribution of revenue:	
Plant operation and maintenance	$30,000
Sewer maintenance	3,500
Bond retirement	9,500
Other charges	6,000

Remarks

The sewer-service charge appears on the same bill with the water charges. The treatment includes chemical precipitation with separate sludge digestion. It has been in operation since 1939. The sewer service charges appeared for the first time almost one year earlier. In 1956, the council increased them by 60%. If a user outside the corporate limits connects to the system, he pays a service charge double that of a comparable city user. By ordinance the city establishes additional fair and equitable charges for industrial wastes of unusual strength or composition. Waste cooling water discharged to the storm sewers is not subject to a fee. No municipal, church or school building pays a sewer service charge.

ERVIN F. LEIST, *Manager*
Department of Water and Sewage

CLEBURNE, TEXAS

Rates Per Month

Residential:	
One family unit (basis: 4 fixtures)	$1.25
Fifth fixture	.15
Each additional fixture	.10
Business:	
Commode and wash basin	1.50
Each additional fixture	.25

Industrial (same fixture rate as business in lieu of charge for first 1,000 cubic feet):

Cubic Feet	*Per 1000 Cubic Feet*
1,000 to 6,000	$.0500
6,000 to 12,000	.0450
12,000 to 18,000	.0375
18,000 to 24,000	.0300
24,000 plus	.0225

Related Information

Population	15,381
Population served by sewers	15,000
Average flow, mgd	1.5
Annual sewer service charge revenue	$57,000
Distribution of revenue:	
Plant operation and maintenance	$5,000
Sewer maintenance	5,000
Bond retirement	16,000
Bond interest	31,000

Remarks

The sewer-service charges appear on the same bill with water charges. The plant includes treatment by means of trickling filters. It has been in operation since 1931; the last addition was in 1959. Rates climbed 66⅔% for that construction. Cleburne residents have paid sewer-service charges since 1915 when the municipal water department took over the sewerage system. The new rates listed will boost total yearly revenue to $80,000.

FRED JACOBS, *Superintendent*
Sewage Treatment Plant

HOLLYWOOD, CALIF.

Rates Per Month

Single family dwelling	$3.00
First additional dwelling unit	2.50
Each additional dwelling unit	1.00
Duplex	5.50

Multiple family residences: apartments, motels, small hotels (less than 50 units) and trailer homes pay on the following basis:

Minimum charge, first unit	$3.00
Each additional unit	1.00

Commercial: stores, offices and industrial units pay $1.50 per unit plus 75% of the water bill which is in excess of the minimum sewer service charge.

Hotels: hotels and boarding houses pay an amount equal to 90% of the water bill. The water rates are 40 cents per 1,000 gallons to a 100,000 maximum. All in excess of that amount is at the rate of 30 cents per 1,000.

Related Information

Population	36,230
Population served by sewers	14,850
Average flow, mgd	8.2
Annual sewer service charge revenue	$332,833
Distribution of recenue:	
Plant operation and maintenance	$95,242
Sewer system	17,811
Depreciation	73,000
Non-operating	68,477
Administrative and general	1,818
Accounting and collecting	12,491
Miscellaneous	6,634
Other	57,360

Remarks

The sewer-service charge and water bill appear on the same sheet. The five-year-old plant includes high-rate trickling filters and biofiltration. Sewer-service charges also appeared for the first time in 1956 with the primary function of retiring the plant bonds. No commercial or industrial users pay on a basis other than volume. There is no penalty or discount for late or early payment.

C. DOLENBACH, *Superintendent*
Sewage Treatment Plant

KISSIMMEE, FLA.

Rates Per Month

Domestic charges for single family dwellings: $1.50 minimum plus 15 cents per 1,000 gallons in excess of 5,000 gallons of metered water up to a maximum charge of $2.85, irrespective of the amount of water billed.

Multiple units: $1.50 minimum for the first unit, $1 minimum for the second, and 75 cents minimum for each additional unit. For the minimum each unit may contribute sewage not to exceed 5,000 gallons of billed water. The sewer charge for additional metered water is 15 cents per 1,000 gallons.

Commercial users: the domestic rates apply to other users for the first 14,000 gallons of water billed. Over this amount, these users pay 72.5% of the water bill, subject to reasonable and proper adjustments by the City Commission. The detailed sewer-service charges follow:

Gallons	*Per 1,000 Gallons*
First 5,000	$1.50
Next 9,000	.15
Next 11,000	.18125
Next 25,000	.145
Over 50,000	.10875

Other users: where a user of the sewer system obtains water from a source other than the city water system, the City Commission makes a contract agreement for appropriate sewer service charges.

Related Information

Population	6,823
Population served by sewers	6,000
Average flow, mgd	.75
Annual sewer service charge revenue	$54,000
Distribution of revenue:	
Plant operation and maintenance	$19,150
Sewer maintenance	4,500
Bond retirement	30,350

Remarks

Sewer-service charges appear on the same bill with electric and water charges. The clerk does not accept payment for less than the total bill. The plant includes both primary and secondary treatment and features trickling filters. It has been in operation for seven years. The ordinance requires owners of structures within 200 feet of a sewer line to connect to it within 60 days after it is available. The city collects a fee of not less than $25 from the owner for such connection. The city reserves the right to refuse industrial connections whose sewage contains waste matter which the plant could not adequately treat at a reasonable cost. During an occupant's absence from the premises, the city manager may discontinue service for such absence upon payment of the fees for discontinuance and restoration. The city receives $12,000 per year from the cigarette tax. These funds finance lateral sewer construction.

ELLIS W. COOPER
Superintendent of Sewage Treatment

LORAIN, OHIO

Rates Per Quarter

The sewer service charge is $1.95 per quarter for 1,350 cubic feet (or less) of sewage contributed. When the volume climbs above this amount, the rate is 13 cents for each additional 100 cubic feet. In addition to the above charges, a "readiness to serve" fee depends on the size of the water meter as follows:

Meter	*Rate per Month*
⅝"	$ .10
¾"	.30
1"	.40
1½"	1.10
2"	1.60
3"	3.60
4"	6.40
6"	14.40

Therefore, the minimum quarterly bill for a user who contributes less than 1,350 cubic feet of sewage per quarter is $2.25. Those living outside the city limits pay an additional 30% surcharge.

Related Information

Population	68,750
Population served by sewers	65,000
Average flow, mgd	9.0
Annual sewer service charge revenue	$391,748
Connection fee revenue	41,878
Total revenue	$433,626
Distribution of revenue:	
Plant operation and maintenance	$111,945
Pumping and sewer maintenance	38,676
Plant construction and bond retirement	55,692
Sewer construction and bond retirement	142,352
Overhead and retirement	18,402
Addition to reserve	66,559

Remarks

Sewer-service charges appear on the same bill as water charges. The plant, constructed six years ago, furnishes primary treatment. Sewer service charges appeared in 1952 to finance the construction of interceptor sewers and the plant. They now also finance the maintenance and operation. Two years ago they increased by about 63% to finance completely the city's share of new sewer construc-

(Continued on page 175)

Mirrors, rectangles, and other tremendous trifles make **Shone**® your bargain buy in sewage ejectors

When 91 years of engineering and experience go into a **sewage pumping device**, there can be only one result—an ejector that is so much in a class by itself, it becomes an "institution" . . . a piece of equipment that keeps other ways of handling sewage **perennially obsolete** . . . a mechanism that makes embarrassing service interruptions and dangerous climbing in-and-out of manholes things of the past. Each part, each material, each contour, each surface of the Shone ejector has significance in the vital job of handling sewage.

1. Consider the **mirror-like** "superfinish" (you can **actually shave** in it) surfaces of the pilot valve slides and seat of the Shone's exclusive control system. Hand-lapped to perfection . . . only the weight of the valve slide plus pilot air pressure maintain the seal for decades of operation. Faces of the two parts fit so accurately that it is actually difficult to pull them apart. There is no leakage . . . opening and closing are truly positive. Parts do not wear "out of balance," because they are "broken in" before leaving the factory.

2. Piston valve and **pistons** are also "superfinished" to the same mirror-like surface . . . and a test of **each** valve assembly assures operation at only 60% of the **minimum** allowable pilot and operating pressure.

3. Or consider the singularity of **rectangular** valves in round pipes. Sticks and stones in sewage may "bridge" in a round pipe under low-flow conditions. Not only are the Shone's valves rectangular, but they have a larger internal cross section than the pipes to which they are connected. This is one of several reasons why **nothing** (but nothing) can choke a Shone ejector in this "bottleneck" spot. Anything which reaches the receiver passes through it and through the discharge valve.

4. We all know cotter pins are fine on tricycles (and on **external** linkage), but not inside pneumatic ejector inlet and discharge valves. You can't find a more perfect snagger for rags and other strangulating debris. Shone has flush-driven pins on valve hinges, another tremendous trifle.

5. A newly-cast, iron receiver, like any good whiskey, needs to be aged. Receivers for Shone pneumatic ejectors are "mellowed" for up to one year. This settles them down, prevents cracks and warping by relieving internal stresses in the crystal structure. Remember that Shone sewage ejector installations are usually considered permanent — the **first U. S. installation, 1889, is still in service.** An important invisible extra!

6. There are no "missing links" in the control linkage assembly of a Shone ejector. **Each** assembly is **set, tested,** dowled, and "match-marked" for **its own** particular receiver assembly. No trial and error fitting on the job. Another Shone "intangible" **asset.**

7. Tipsy control rods are obviously going to be less than 100% efficient. Shone bell rods are sober, straight, and only work with or against the forces of the bells and gravity. There is **no** side thrust to deform the packing seal. A trifle? No, a reason why Shone packing boxes go **years** without repacking.

8. Today, nothing is truer than "time is money." A special cast iron header, job tailored for each unit, holds field fitting, pipe cutting, etc., to bare necessities. Duplex units are complete with cross connections. The installer spends his time installing!

Would you like to hear more about how these and other design subtleties which make Shone the startling bargain in ***sewage*** *pumping equipment? Call your Yeomans representative. He's in the Yellow Pages.*

E-6142

YEOMANS 2000-3 North Ruby Street Melrose Park, Illinois

WASTE HANDLING SPECIALISTS FOR OVER 60 YEARS

(Continued from page 173)

tion. There is no special charge based on strength or large volumes.

A. V. AGNEW
Water and Sewer Superintendent

OSHKOSH, WIS.

Rates Per Quarter

All pay a fixed charge of 40 cents per quarter plus a volume charge as follows:

Cubic Feet	*Per 100 Cubic Feet*
First 3,000	$ .085
Next 7,000	.065
Next 90,000	.04
Over 100,000	.03

The minimum bill is $1.15 per quarter. A summer sprinkling provision provides that the bill rendered April first shall govern when the bill for any period from May through September indicates the use of 300 cubic feet more than the earlier bill. Industrial firms pay on the basis of each employee contributing 364 cubic feet.

Related Information

Population	48,100
Population served by sewers	45,100
Average flow, mgd	6.5
Annual sewer-service-charge revenue	$136,341
Distribution of revenue:	
Plant operation and maintenance	50,385
Pumping operation and maintenance	8,455
Other	77,501

Remarks

One bill contains the sewer-service charge and water charge. The primary treatment plant has operated since 1937 with additional construction in 1949. The sewer-service charges first appeared in 1937 and have not changed. There is no discount or penalty for the approximately 12,750 accounts.

LEO NOWICKI
Pumping Station Superintendent

RICHMOND, CALIF.

Rates Per Month

Each "sewer-service unit" pays a fee of 75 cents per month. A residence comprises one "sewer-service unit." So also does one apartment with separate cooking facilities. Restaurants, hotels, boarding houses, motels without kitchens and institutional buildings remit on the basis of one "unit" per five plumbing fixtures or fraction thereof. Industries pay on this same basis plus a charge equivalent to one "unit" for the quantity of their waste equal to 2,000 cubic feet of domestic sewage. In addition, they must pretreat strong waste, reducing it to the domestic equivalent, before releasing it to the city sewer.

Related Information

Population	75,000
Population served by sewers	65,000
Average flow, mgd	6.5
Annual sewer-service-charge revenue	200,000
From taxes	180,000
Sewer connection fees	23,000
Surplus from past revenues	92,000
Total revenue	$495,000
Distribution of revenue:	
Plant operation and maintenance	$105,000
Sewer maintenance	60,000
Bond service and surplus	330,000
Total	$495,000

Remarks

The sewer-service charge appears on a separate bill. The plant, built in 1957, provides primary treatment only. Additions now being completed include sedimentation basins, two digesters, vacuum filters, an office and a laboratory at a cost of $1,250,000. Current sewer service charges are the same as those first imposed in 1957. They are not sufficient to

(Continued on page 177)

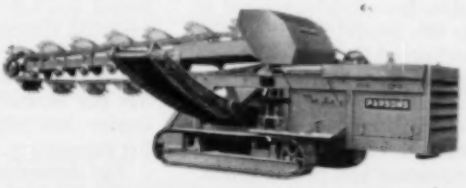
FOR SIZE, DITCH, AND DOLLAR

nothing compares with the . . .

ALL NEW PARSONS 255

The 255 is a proud, new addition to the Parsons line and boasts the largest capacity for its size of any trencher on the market today. Its compact size has low center of gravity for maximum stability and all around balance. Handles easily in close quarters. You can truck it without disassembly or special road permits.

Hydraulic actuation of steering and bucket line clutches give you faster, smoother machine control to hold grade tolerances. Positive down crowd through hydraulic power gives operator finger-tip control. Bucket line is hydraulically adjusted. Send the coupon below for full details or see your Parsons distributor.



Digs 15 feet deep
Cuts 18 to 48 inches wide
60 Digging feeds* from 3.9 to 140.2 inches per minute
Height: only 9 feet, 2 inches
Width: only 7 feet, 10 inches

* With optional sprocket

PARSONS COMPANY
Newton, Iowa

A Division of KOEHRING Company

A108AC

Please send details on the all new Parsons 255

Name_____

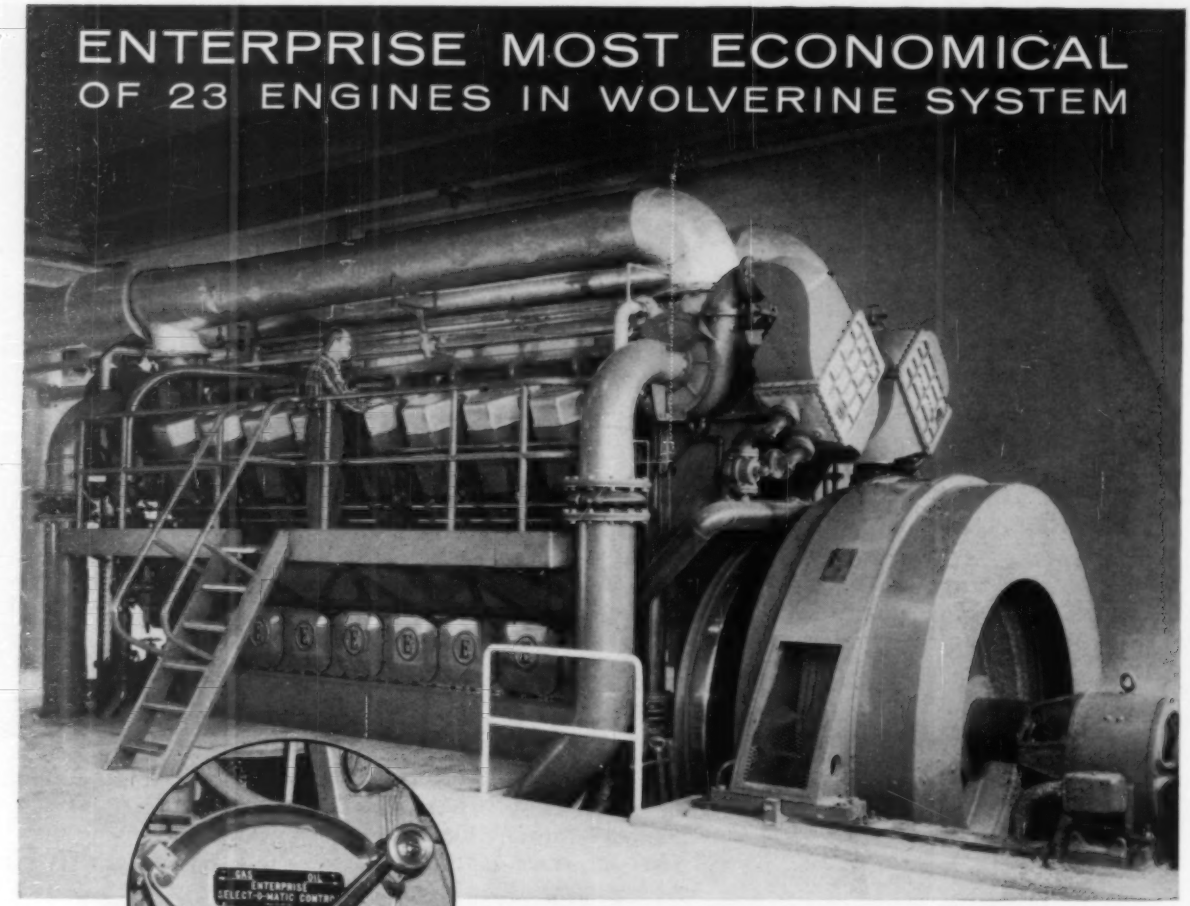
Title_____

Dept. /or Company_____

Street_____

City_____ State_____

ENTERPRISE MOST ECONOMICAL OF 23 ENGINES IN WOLVERINE SYSTEM



- **LOW OPERATING COST**
- **OUTSTANDING SERVICE**
- **EASE OF MAINTENANCE**
- **INHERENT POWER RESERVE**
- **SIMPLE FUEL CONTROL (SELECT-O-MATIC®)**

Wolverine Electric Cooperative, Inc., headquartered at Big Rapids, Michigan, chose this Model DGSRV-16-3 Enterprise 16-cylinder Turbo-charged Dual Fuel Engine to power its Van Dyke Plant at Burnips, Mich., because of low installation cost and Enterprise's enviable reputation for fuel economy in dollars per kilowatt. Read what James O. Wood, Superintendent of Production, has to say about Enterprise economy and performance:

"Our Enterprise engine is one of the most economical in our system, which consists of 23 engines and includes five different makes. We are especially pleased with the operation of the Enterprise 'Select-O-Matic'® controls, and the ease of engine maintenance. Enterprise service has been outstanding."

Rated 3500 KW, 4890 BHP at 360 rpm, Wolverine's versatile Enterprise, operating on fuel oil and gas, produces power at the extremely low cost of only 3.56 mils per KWH including maintenance, based on gas cost of 35¢ per M/cu.ft., and fuel oil cost of 10¢ per gal. This engine has produced over 4000 KW when called on for emergency.

For dependable, low-cost power on any municipal or industrial installation, Enterprise heavy duty Engines are designed for the most exacting requirements — in electric power generation, sewage plant power and for pumping systems. Models available from 73 to 7703 hp, with fueling in diesel, dual fuel, tri-fuel or spark-ignited gas. Call or write today for complete information.

ENTERPRISE Engines

Power Division of General Metals Corporation

A SUBSIDIARY OF TRANSAMERICA CORPORATION

550 85TH AVE., OAKLAND 21, CALIF. • 37-02 48TH AVE., LONG ISLAND CITY 1, N. Y. — National and worldwide sales and service

(Continued from page 175)

pay for the cost of maintenance and operation as well as bond retirement. The supplemental tax is subject to yearly adjustment.

E. L. McDonald, Jr.
Plant Superintendent.

SANTA CRUZ, CALIF.

Rates Per Month

Family Residence: $1.35
Others: $1.60 minimum charge for the first 1,000 cubic feet plus:

*Cubic Feet	Per 100 cubic feet
Next 1,000	$.16
Next 2,000	.11
Over 4,000	.08

*For other than a family residence, the amount of sewage discharged to the sewer (the basis for the charge) is estimated to be 80% of the water delivery.

Those without metered water: the street superintendent estimates the amount of sewage discharged and establishes a flat monthly rate comparable to the schedule of charges.

Over 10,000 cubic feet per month: the city negotiates contracts with large users. These need not be on the basis of the schedule.

Related Information

Population	25,950
Population served	25,000
Average flow, mgd	3.5
Annual sewer service charge revenue	$190,000
Distribution of revenue	
Sewer and plant operation and tenance	$75,000
Construction and bond retirement	115,000

Remarks

Sewer-service charges appear on the same bill with water charges. The plant includes digesters and Dorr Flotation Vacuators. It has been in operation for 13 years. Sewer-service charges began at the same time. The city charges a fee of $50 for each connection to the public sewer. The ordinance sets forth formulas for determining the cost to new connectors where a main extension is necessary as well as the method of rebating fees to the original owners when new connections take place to an old line. Persons outside the corporate limits pay sewer charges 50% greater than city residents. When a property is vacant for 30 days or more, the owner may obtain a rebate.

A. E. Bell
General Foreman
Sewage Treatment Plant

STUMP CUTTER DIVIDENDS

A good solid tree stump some two feet in diameter probably will require a crew of four men with a truck and crane about four days to remove it. But give one man a stump cutter and he can knock it down out of sight in less than an hour. Harry E. Turner, forester for the East Orange, N. J. Shade Tree Commission, has equipped his crew with a Vermeer Pow-R-Stump Cutter. And they have successfully used it on stumps as wide as six feet. Moreover, the cutter does not damage adjoining sidewalks. In the past, the city had a substantial sidewalk and driveway repair bill caused by stump removal. He feels that elimination of this item alone would pay for the cutter in two years. ◄◄

Why Highway Departments Buy Flink Spreaders

Even when not the lowest bid

When it comes right down to buying a spreader, specifying engineers are looking for more than a low price tag. They want a unit that can perform under the toughest road conditions and stand up year after year with a minimum of maintenance. And, if something does go wrong, they want fast delivery on parts and expert field service help.

This is the kind of product and service that you can expect from a reliable manufacturer. And this is exactly what Flink has delivered for the past 23 years. We feel the best way to sell more spreaders every year is to build a product you can depend on—then back it up with top flight service.

This low cost Flink Model HD42 is ideal for towns needing a combination ice control and seal coating machine.

This is why highway department officials continue to recommend Flink spreaders. They've learned, from experience, that Flink spreaders can move out and clear up icy highways fast. What's more, certain models double in seal coating and dust control in the summer.

Spreaders For Every Budget

Take the Flink Model HD42 for example. This hydraulically powered tailgate spreader is used for ice control, seal coating and dust control in hundreds of towns, townships, cities and counties. Patented oblique blades lay a mat spread of even thickness. Controlled from cab. Truck can dump same as with original tailgate.

Chosen For Illinois Tollway

With the Flink Model HDWS4, considerable material is saved because the left-side spinner directs material onto roadway, not the shoulder. A fleet of these hydraulically powered, cab controlled spreaders are keeping traffic rolling on the Illinois Tollway right now. Two-speed auger conserves material, permits instant change from abrasives to straight rock salt.

Flink LMC Hopper Spreader.

Heavy Duty Hopper Spreader

In addition to a full line of tailgate spreaders, Flink makes hoppers ranging in capacity from 4 to 13 cubic yards. Model LMC, shown above, is available with PTO, hydraulic or gasoline engine drive, cab controlled. Some have mechanically operated two-speed conveyors with quick change from high to low. Others have individually controlled conveyor and spinner disc, hydraulically powered.

Baker-Flink Snow Plows

Baker-Flink Snow Plows include one-ways, reversibles, power reversibles, and V plows. For complete information on Flink Spreaders or Baker-Flink Snow Plows, mail the coupon below.

THE Flink co.

FLINK COMPANY
5509 N. Vermillion St. • Streator, Illinois

☐ Please send your ice control and seal coating literature
☐ Please send me latest specifications and catalog on your snow plows

NAME.....
TITLE.....
ADDRESS.....
CITY.....
STATE.....

Easy starts on cold mornings

Cold, damp winter weather no longer causes truck-starting problems in Dearborn, Mich. On such mornings a man at each of the two Department of Public Works yards warms up the trucks with a portable oil heater. The Summeraire portable space heaters, made by Midland Products Co., Mahwah, N. J., have a gasoline-engine-driven fan which shoots a blast of hot air through the radiators to dry out wires and plugs and warm the engine. Here James Manderaschia, service man, and Motor Transport Division Superintendent R. W. Hill demonstrate the operation. ◄◄

Cleveland's revolving fund

The Division of Motor Vehicle Maintenance provides for the repair and maintenance of all motorized equipment of the City of Cleveland except the Transit System which is operated by a Board and a General Manager. These details are accomplished by the operation of heavy repair and overhaul shops at East 49th Street and Harvard Avenue and about ten small shops throughout the city.

We operate this division on a "revolving fund basis." This means that we have working capital and each month we bill the other divisions for work performed and materials delivered to them. The Division of Accounts then transfers from the budgeted expense accounts of the various divisions to the cash account of this division.

Increase in equipment over the last ten years was 642 pieces. Materials cost per piece in that period increased as follows:

Parts, tires, batteries, up $85.50 or 91.6%.

Gasoline, oil, grease, anti-freeze, up $31.80 or 19.2%.

Table I lists the number and value of the 1,783 vehicles and 938 road machines, and Table II gives the operation and maintenance costs per vehicle and per vehicle mile.

Three manufacturers have sold the city trucks in all categories: light, medium and heavy. They are Ford, G.M.C., and International.

Three other manufacturers have sold both medium and heavy trucks. They are White, Diamond T and Federal.

Five manufacturers have sold heavy trucks only, Mack, Walters, Reo, Auto Car and F.W.D.

The big five in fire apparatus are Seagrave, American La France, Buffalo, Peter Pirsch, and Mack.

The 52 motorcycles are, of course, Harley-Davidsons.

FRANK M. CUNNINGHAM
Commissioner
Div. of Motor Vehicle Maintenance
Cleveland, Ohio

Table I
Inventory Summary

	Number	Valuation
Passenger Cars	614	$1,085,963.69
Light Trucks	368	769,530.75
Medium Trucks	240	779,217.65
Heavy Trucks	418	3,107,144.11
Motorcycles	52	78,298.16
Fire Equipment	91	1,678,171.41
Total Vehicles	1,783	$7,498,325.77
Special & Construction Equipment	938	2,327,673.08
Total	2,721	$9,825,998.85

Note: Special and construction equipment consists of trailers, air compressors, portable pumps, highway mowers, street flushers, street sweepers, eductors, concrete mixers, tree sprayers, salt spreaders, paving machines, locomotives, snow plows, cranes, road graders, bulldozers, tractors, etc.

Table II

Average Annual Cost per Vehicle				Cost in Cents per Vehicle Mile		
Operating	Maintenance	Total		Operating	Maintenance	Total
370.04	843.03	1213.07	Passenger Cars—Police	.027	.061	.088
138.04	305.24	443.28	Passenger Cars—All Others	.019	.042	.061
536.54	1327.02	1863.56	Light Trucks—Police	.029	.072	.101
144.66	351.20	495.86	Light Trucks—All Others	.028	.068	.096
576.13	1859.32	2435.45	Medium Trucks—Police	.042	.135	.177
238.32	604.53	842.85	Medium Trucks—All Others	.050	.128	.178
509.45	1263.26	1772.71	Heavy Trucks—All	.090	.225	.315
224.16	318.30	542.46	Motorcycles	.005	.078	.083
125.58	722.49	848.07	Fire Trucks	—	—	—
68.65	321.76	390.41	Special Construction Equipment	—	—	—

ALL "SHOOK UP" DECIDING ON AN AIR COMPRESSOR?

Take "Hardrock Smitty's" advice and

GO SMITH!

There's a complete line of Smith compressors ranging in size from 45 cfm to 125 cfm in both portable and stationary models. The Smith compressor is designed and built to deliver years of trouble free service under all conditions.

- low initial cost
- low operating cost
- easy maintenance
- simple, compact design
- quick starting
- single stage compression

Compare price . . . compare job results you'll go Smith!

SMITH
AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

Ask your dealer for an "on the job" demonstration. (write us for complete information and the name of your nearest dealer)

Downtown Bird Problems Fly Away . . . THANKS TO RID-A-BIRD!

Starlings Are Exterminated; Laud Merchants for Interest

By John Potisek

The battle against the starlings in downtown Terre Haute has ended. There are no new daily deposits on buildings and the walks below them, and the passers-by no longer have fears of bombardments.

Making use of a ch... called Rid-A-Bird... says it ha... plan. The... on the ro... penetrates...

Reprinted from TERRE HAUTE TRIBUNE, March 1, 1961

For many years the downtown area of Terre Haute, Indiana, suffered from unsightly, unsanitary and costly conditions caused by pest birds. The Terre Haute Chamber of Commerce, Downtown Merchants Association, building owners and civic-minded citizens decided upon the Rid-A-Bird method for solving their bird problems.

The results were phenomenal! As Mr. John K. Lamb, Executive Vice President of the Terre Haute Chamber of Commerce said, ". . . the birds almost immediately disappeared from those areas which had been treated by the Rid-A-Bird method and at the end of the program there were no starlings visible in our downtown area at all."

More and more cities and towns are discovering for themselves the reasons why Rid-A-Bird insures guaranteed success. No awkward, complicated or mechanical devices to install or service, which give, at best, only temporary relief. (See newspaper inset.)

If your city has a pest bird problem in its shopping center or downtown area, it will pay you to investigate the Rid-A-Bird System now. It is *simple, safe* and *sure.*

RID-A-BIRD, INC.
P. O. Box 22, Muscatine, Iowa

Please send complete information, AC-2

NAME

ADDRESS

CITY STATE

POSITION

FRINK Reversible
PLOWS LEFT, RIGHT
OR STRAIGHT AHEAD

trip blade saves
wear and tear, even
on roughest roads

Here's why sturdy Frink Reversible Trip-Blade Sno-Plows give you all-round plowing versatility . . . meet almost any snow removal problem.

Frink Reversibles plow left or right for in-city maneuverability . . . bulldoze straight ahead for clearing intersections, bridges, lanes, parking lots, airport ramps and wide sidewalks. Cab-operated power hydraulic unit automatically angles plow 10, 20, 30 or 37 degrees left or right, even while truck is moving! (Manual reverse also available.)

And heavy duty Frink construction takes roughest operating conditions in stride, slashes your repairs and overhead. Preloaded trip spring mechanism with unique moldboard linkage follows road contour, glides plow over obstructions, quickly returns to normal plow position. Scuff shoes protect #10 gauge steel moldboard from curbs and side obstructions.

For complete details on versatile **Frink Reversible Sno-Plows** write Dept. AC1161

FRINK SNO PLOWS Inc.
Engineers of Major Advances in
Modern Snow Plow Construction
Frink Sno-Plows Inc., Clayton, New York
In Canada:
Eastern Steel Products Co., Preston, Ontario

FRANKLIN
FABRICS
UNIFORMS

373

Range 373
has symbolized
the top quality
Police and
Fire Department
Uniform Fabrics
for over 25 years.

It is made in all weights
for all climates.

Stock dyed
2 ply
Fast Colors
Uniformity of Shade

Corresponding qualities in worsted whipcords and elastiques; gabardines and tropicals in either 100% worsted or worsted/dacron blends.

TO BE SURE, SPECIFY
FRANKLIN WORSTEDS

for additional information write to—
David E. Singer, Sales Agent
FRANKLIN WORSTED COMPANY
40 East 34th St., New York 16, N. Y.

Plan or Perish

The small town of Hahira, Ga., finds that planning, plus action and citizen support, mean economic and civic growth

By **N. H. THOMPSON**
Hill and Adley Associates
Community Planners
Atlanta, Ga.

Until recently, Hahira was just another rural Georgia town, outwardly similar to many of its size throughout the nation. It had grown only slightly over the past twenty years.

The shops in the downtown business district were in need of painting and repair. Streets and sidewalks required paving. The community lacked many of the conveniences which larger cities take for granted. Progress and all things associated with urbanization had somehow passed Hahira by. Like most communities of around 1,200 people Hahira was for many years content to let growth—if it came at all—take its own course.

The town and its people played a passive role—that is until 1958. Within a relatively short period Hahira's outlook changed. Merchants, elected city officials, and responsible citizens began to recognize the fact that they had problems which, if attacked in the proper way, could be solved.

Downtrend Analyzed

Public officials and interested citizens worried over the permanent loss of the area's young people, who, after graduating from the local schools, left the community for cities offering better job opportunities. They also recognized the lack of recreation areas and equipment both for children and adults and the absence of funds for them.

Moreover, they worried about the expected influence of the new interstate highway passing west of the city. Once the limited-access highway is completed it will mean that only a matter of minutes separate Hahira from the more appealing shops in downtown Valdosta. The business men in the town, faced with the problem of a contracting market because of the large numbers of Hahira's people who already shop in Valdosta, knew that they would have to take strong action to attract and hold customers. These and other problems such as parking and traffic congestion, sewage treatment, sidewalk and street paving, improved community facilities, and more important, how to provide the necessary funds for all these needs have formed the basis behind the planning movement.

Action Starts

To find solutions, city authorities and local civic groups began holding open town meetings where citizens expressed their own views on issues and conditions that needed study or improvement. A representative of Georgia Power Company's Community Development Division met and discussed possible solutions. The outgrowth was a Planning Commission, composed of five members. The city applied for and received a federal urban-

(Continued on page 183)

There is increased activity in building construction.

. . . for winter ice control
SWENSON SPREADERS
. . . for summer resurfacing

. . . REPLACEABLE TAIL GATE MODEL

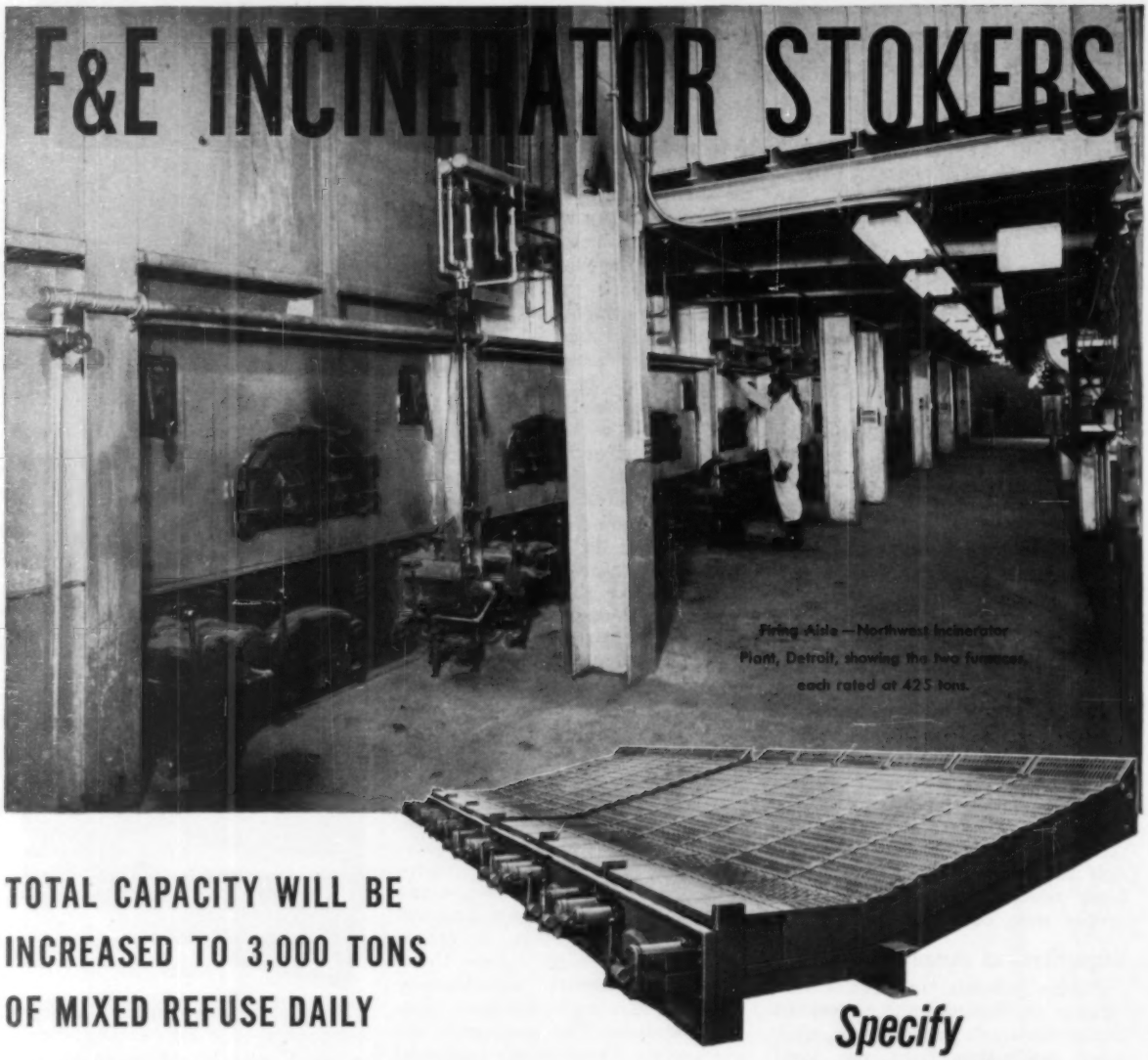
. . . V-BOX STYLE SPREADER

. . . FORCED FEED, ROLL TYPE

Here's year-round spreading dependability for any combination of sand, gravel, salt, chemical or cinders. Swenson's new Replaceable Tail-Gate and V-Box models give the driver precise, hydraulic cab control for direction, width and flow of material — spread wide or narrow — heavy or light — left, center or right with swaths from 2′ to 45′. Reliable Forced Feed, Roll Type Spreader is the standard of the industry — spreads material evenly at all speeds. Write today for information about Swenson's complete spreader line.

SWENSON SPREADER
LINDENWOOD, ILLINOIS

DETROIT to install TWO MORE F&E INCINERATOR STOKERS



Firing Aisle—Northwest Incinerator Plant, Detroit, showing the two furnaces, each rated at 425 tons.

TOTAL CAPACITY WILL BE INCREASED TO 3,000 TONS OF MIXED REFUSE DAILY

Seven F&E Multi-Cell Incinerator Stokers, with a total rated capacity of 2,325 tons of mixed refuse daily, are already in use in the various plants in the City of Detroit. Operating experience shows that all units easily exceed their nominal rating in normal operation, resulting in substantial savings to that city.

When additional incinerator capacity was required, F&E Multi-Cell Incinerator Stokers were again selected.

According to Mr. Theodore E. Winkler, Engineer of Waste Disposal, the City of Detroit will have a total rated capacity of 3,000 tons when the two F&E Incinerator Stokers now on order are installed.

F&E

Specify F&E Multi-Cell Incinerator Stokers

Complete Flexibility of Operation
Utmost in Economy—Reduced Labor
Rugged Construction—Lifetime Dependability
Progressive Burning for Maximum Results

CONTACT F&E TODAY
for engineering details and data.

FLYNN & EMRICH

BALTIMORE 2, MARYLAND

(Continued from page 181)

planning grant under the provisions of Section 701 of the Housing Act of 1954.

In December of 1958 the city retained our planning firm to develop an over-all community plan. Work began immediately with a detailed survey of existing land uses and housing conditions. The first step was a study of the area's population and economy. Next was a community facilities plan, followed by a major thoroughfare plan and a land use plan. The city adopted subdivision regulations and following public hearings, approved and put into effect a zoning ordinance.

Orderly Development

Early last year the Hahira Planning Commission issued its *Plan of Improvement* which outlined the steps to insure the orderly development of the community. Among the specific recommendations of the report were methods for improving downtown parking conditions and where and how recreational facilities could be expanded. It urged that the city adopt building codes and a minimum housing code. As a means of financing needed municipal improvements the plan strongly recommended that the city inaugurate a tax revaluation program.

The results are indications of progress in the community. Within the past year Hahira secured two new industries, which meant job openings for 150 workers. There is increased activity in building construction. Recently, one of the local banks moved into a new modern office; other businesses expect to follow this example. Plans are being drawn for a complete city-wide sewer system and treatment plant. Sites for a new civic center are also being considered.

Of even greater significance is the fact that the people of Hahira are better equipped to face the problems of expansion because they know how and in what directions their city can best be developed. With the help of ambitious public officials and the co-operation of local businessmen, Hahira can avoid the mistakes usually made by other small, underdeveloped communities as they attempt to grow into larger urban centers. Growth in Hahira will not be haphazard but according to a predetermined design. ◄◄

THROWAWAY YOUR GUTTER BROOMS!

THROWAWAY BROOM OUTDATES GUTTER BROOM REFILLING

Cuts hours labor cost—in minutes worn broom is easily replaced with a new factory made UNILOY THROWAWAY BROOM. Fabricated of premium domestic wire, THROWAWAY broom is perfectly balanced to reduce machine wear and increase mileage. Made for all municipal power sweepers.

Complete Broom $39.00 each

delivered anywhere in United States.

We solicit your bid invitations. Write for further information

UNILOY

UNITED ENGINEERING MANUFACTURING CO.

BOX 248, COVINA

EDgewood 1-2204

COVINA, CALIFORNIA

HERE'S HOW 800 CITIES SOLVED THEIR STUMP PROBLEM...

Original Low Cost Vermeer

POW-R-STUMP CUTTER

Rips Stumps To Shreds In Minutes!

You'll save hundreds of back-breaking man-hours and thousands of dollars annually . . . with a Vermeer Pow-R-Stump Cutter. The choice of tree experts everywhere! It's the modern way, the economical way to remove ugly stumps. A one-man operated unit. Removes stumps 10" below the ground. Write for complete information, low price and FREE demonstration.

VERMEER MANUFACTURING CO.

1452 W. Washington Pella, Iowa

Before you buy any storage tank...

take a look at

PRESTRESSED CONCRETE

No matter what your storage problem, a prestressed concrete tank offers many immediate and long term advantages. Minimum maintenance, longest service life, lowest overall cost, 75% of construction cost is spent locally. Modern in engineering and design, proven in service, lowest in cost...prestressed concrete should be considered in any tank planning.

Send for your copy of our new brochure "Prestressed Concrete Tanks."

PRELOAD

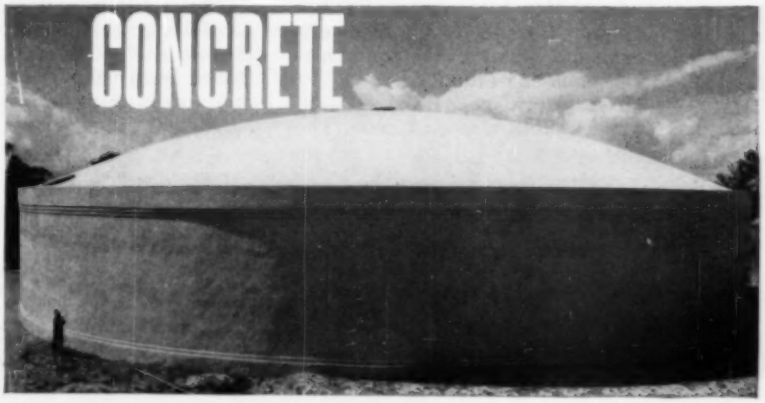
THE PRELOAD COMPANY, INC.

355 Lexington Ave., New York 17, N. Y. • Tel.: MUrray Hill 7-0488
1216 Hartford Bldg., Dallas 1, Texas • Tel.: Riverside 8-4047

PRELOAD CONCRETE STRUCTURES INC.
837 Old Country Rd.
Westbury, L. I., New York

THE CANADA GUNITE COMPANY, LTD.
125 Hymus Blvd.
Pointe Claire, P.Q., Canada

HERRICK IRON WORKS
P.O. Box 3007
25450 Clawiter Rd.
Hayward 2, Calif.



REPLACES 4 TO 7 MACHINES

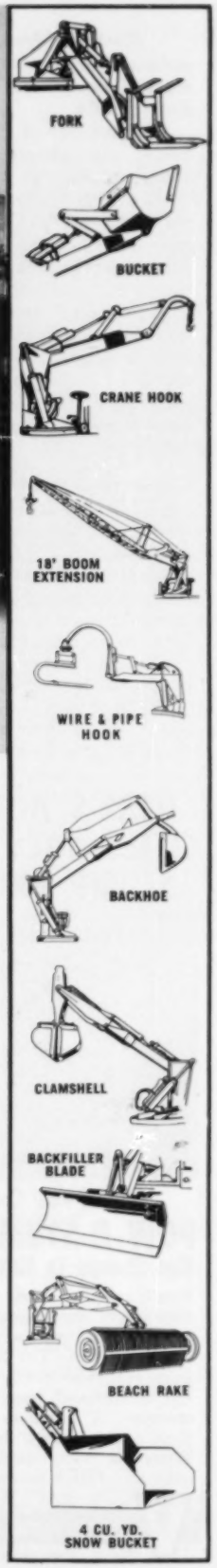
180° SPEED SWING

ALL-PURPOSE MATERIAL HANDLER

NOW—the *all-purpose* material handler that gives you one-man crew advantages. It's the soundest investment of all for your requirements because it does *all* the jobs . . . earns its way on one application after another. And its usefulness is multiplied to the extent that it replaces single-purpose, specialized equipment!

The best features of all material handling machines are combined in the Pettibone Speed Swing, plus the *exclusive* 180° boom swing—90° left or right—to make it the most efficient, *most versatile* all-purpose material handler in the field.

Example: shown above, the Speed Swing backfills a sewer trench. The 180° boom swing permits it to work parallel to the trench in a confined area with no gee-hawing or maneuvering of the machine. Traffic is not disrupted . . . can move safely in other lanes. Other applications are numerous: park and street maintenance, tree removal, culvert installations, loading and spreading materials with high speed operation, loading out old curbing and sidewalks, snow removal—to mention a few. And all on a cost-cutting operation basis. Shown at right, 10 quickly interchangeable attachments (by changing *only* 3 pins) that make the Speed Swing the *most adaptable, most versatile* all-purpose material handler of all!



Get the facts on how the Pettibone 180° Speed Swing can reduce your equipment investment, as well as your maintenance costs.

PETTIBONE MULLIKEN CORPORATION

4700 W. DIVISION ST. CHICAGO 51, ILLINOIS

SPaulding 2-9300

ZONING AND PLANNING DECISIONS

Edited by NORMAN WILLIAMS, Jr.

Redevelopment of Blighted Vacant Land

NEW YORK. *Cannata* v. *City of New York*, 204 New York Supplement (2d) 982 (Supreme (lower) Court, June 28, 1960).

In this case, a New York State statute authorized condemnation of blighted vacant land for either residential or industrial redevelopment, with elaborate findings on the nature of such blighted vacant land and on its harmful effects on urban development. The relevant characteristics were:

> "(1) subdivision of land into lots of such irregular form and shape or such insufficient size, depth or width as renders them incapable of effective or economic development; (2) obsolete and poorly designed street patterns with inadequate access to such vacant or predominately vacant areas or street widths or block sizes which are unsuitable for appropriate development of such areas; (3) unsuitable topographical, subsoil and other physical conditions impeding the development of appropriate land uses; (4) an obsolete system of utilities serving the area; (5) buildings and structures unfit for use and occupancy as a result of age, obsolescence, dilapidation, inadequate maintenance, or other factors affecting their physical condition; (6) dangerous, unsanitary or otherwise improper uses and conditions which adversely affect the public health, safety and general welfare; and (7) scattered improvements which, because of their incompatability with an appropriate pattern of land use and streets, retard the development of the land."

The area involved was designated by the City Planning Commission as appropriate for action under the statute, and the local governing body authorized preparation of a plan for industrial redevelopment. The owners in the area objected, both on the constitutional grounds and for an alleged lack of compliance with the statute.

In the opinion, the Court held that the constitutional problem involved was whether the city had the right to condemn a blighted area of this type, as contrasted with the typical residential slum. In a long and verbose discussion, not notable for its clarity, the Court finally held that there was nothing in the record to overcome the presumption of validity.

Billboard Control—Federal Interstate Highway System

NEW HAMPSHIRE. *Opinion of the Justices*, 169 Atlantic (2d) 761 (Supreme (highest) Court, April 19, 1961).

This advisory opinion involved a proposed law to enable New Hampshire to take advantage of the "bonus" provisions of the federal interstate highway law. Under those provisions, a state providing certain types of restrictions on billboards is granted additional federal funds for highway construction. The New Hampshire Court here emphatically upheld such billboard control.

The opinion started with a strong statement that interstate highways were built to provide the public with safe travel, "and not to secure commercial advantages for a limited number of advertisers." Moreover, the Court adopted the Vermont theory of billboard regulation—

> "Whatever value billboards along such highways possess is due to the presence of the public, whose tax money has constructed the highways. Kelbro, Inc. v. Myrick, 113 Vt. 64, 67-68, 30 A.2d 527."

Moreover, the Court went on with a strong statement of the expanding scope of the police power and the consideration underlying billboard control.

> "With vehicles hurtling along at the speed which characterizes travel on interstate or so-called super highways, an instant's inattention or confusion may be disastrous. We need not labor the point that anything beside the road which tends to distract or confuse the driver of a motor vehicle directly affects public safety. Signs of all sizes, shapes and colors, de-

(Continued on page 187)

25-HP MODEL VF4 provides power for the portable sprayer made by John Bean Div., Food Machinery & Chemical Corp., Lansing, Michigan.

9.2-HP WISCONSIN powers the "Big 60" riding mower-mulcher made by Pennington Mfg. Co., Addison, Illinois.

keep your costs within your budget

with **WISCONSIN-powered equipment**

Dependable power is the logical start for cutting costs in park maintenance operations. That's why you usually find Wisconsin Engines on "professional" equipment like the heavy-duty sprayer and riding mower-mulcher shown above.

Wisconsins differ in size, not in quality. They are precision-built to keep your equipment on the job and out of the repair shop. Their high torque prevents stalling under shock loads, thus eliminating delays.

The single-cylinder and the V-4 have tapered roller main end bearings on a forged-steel crankshaft. Both have positive pump-circulated lubrication. And both keep cool and hustling even in 120°-plus heat.

Keep your jobs on schedule and your costs down with equipment powered by rugged Wisconsin Engines — *now 3 to 60 hp!* Send for Bulletin S-283. Write to Dept. P-11.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

DEFENSE-IN-DEPTH

...a standard painting practice for New York State

Here's an example of Defense-in-Depth painting on the Crescent Bridge, spanning the Mohawk River, just north of Albany, N. Y. Eighteen months ago, the bridge was given three coats of paint containing Basic Lead Silico Chromate—the remarkable pigment that builds corrosion inhibition, weather resistance and durability into *every* coat. Basic Lead Silico Chromate insures anti-corrosion protection all the way out from primer to intermediate to finish, plus life-extending durability all the way in from finish to intermediate to primer. That's what "Defense-in-Depth" means. The savings are outstanding any way you look at it.

New York was one of the earliest enthusiastic users of Basic Lead Silico Chromate paint . . . backed up by National Lead's 10-year exposure tests with its own field experience on actual bridges. Result? On November 28, 1958, The New York State Department of Public Works, Division of Construction, officially issued a "Paints and Painting" standard specification calling for Basic Lead Silico Chromate pigment in *all* coats of rust-inhibitive paint systems for highway structures.

Today, paints pigmented with *M50*® Basic Lead Silico Chromate are proving their worth in states from Maine to California. Remember another big advantage too . . . *M50's* low tinting strength allows high pigmentation in a wide variety of attractive shades.

For information on how *M50* Basic Lead Silico Chromate can help you, write or call National Lead Company.

M50® an oncor Pigment...
A Development of National Lead Company
General Offices: 111 Broadway, New York 6, N.Y.

(Continued from page 185)

signed expressly to divert the attention of the driver and occupants of motor vehicles from the highway to objects away from it, may reasonably be found to increase the danger of accidents, and their regulation along highways falls clearly within the police power.

"Another consideration bearing on the constitutionality of the bill rests on the fact that New Hampshire is peculiarly dependent upon its scenic beauty to attract the hosts of tourists, the income from whose presence is a vital factor in our economy. That the general welfare of the State is enhanced when tourist business is good and affected adversely when it is bad, is obvious."

The most significant legal point here is the adoption in an adjacent state of the Vermont theory of billboard regulation—i.e., that a billboard is not so much a use of private land as the use by adjacent landowners of the view over a public highway, i.e., in effect subjecting the use of the highway to a compulsory easement of view.

Duck Hunting As A Public Use

WISCONSIN. *Branch* v. *Oconto County*, 109 North Western (2d) 105 (Supreme (highest) Court, May 2, 1961).

In this case the owner of all the land surrounding the navigable lake began to charge a fee for duck hunting on the lake, and subsequently forbade all hunting there. The county authorities proceeded to condemn a right-of-way for public access to the lake, and the owner challenged these proceedings on constitutional grounds.

In the opinion the Court held that, since in Wisconsin the state owns the bed of navigable lakes and holds it in trust for all citizens, the condemnation of access to such a lake simply permits the public to enjoy the activities for which the trust relationship was intended. The condemnation proceedings were accordingly upheld.

This decision is a welcome change from older decisions stating that hunting is not a sufficient basis for condemnation under the public-use doctrine.

Declaratory Judgement on Invalidity of Residential Zoning Restrictions—Significance of Existing Non-Conforming Use

NEW YORK. *Scarsdale Supply Co.* v. *Village of Scarsdale*, 8 New York (2d) 235, 170 North Eastern (2d) 198 (Court of Appeals (highest court), October 21, 1960).

In this case, a tract used as a building supply yard in a business district was rezoned to residence and the owner of the yard sought a declaratory judgment that the residential zoning was invalid. The village argued that the existence of a non-conforming building yard, which could continue under the ordinance, was conclusive proof that the new zoning regulations did not deprive the owner of substantial use of the land. However, the Court held that the extent of the non-conforming business use did not preclude the owner from trying to prove that the tract was "most adapted to a use now precluded under the zoning ordinance."

Melt your next snow storm *down the drain!*

Peabody high capacity mobile snow melters make removal easy

Now heavy snow falls can be removed easily and at high speed from streets, parking lots and airports. The Peabody Snow Melter utilizes a direct-contact closed-circuit hot water generator fired by a fully automatic light oil burner. The extremely hot water produced is formed into high velocity jets which impinge on and agitate snow, quickly melting it. It is then discharged to sewers or catch basins.

The Peabody Snow Melter offers these features:

- Fully automatic
- Rapid snow removal
- Truck or trailer mounted
- Efficient (approaching 100%)
- Simple and economical to operate
- Sanitation and other trucks freed for regular jobs
- Truck renting and snow haulage problems eliminated
- Safe operation—no dangerous exposed flames or hot gases

Write today for complete information.

PEABODY ENGINEERING CORPORATION

232 MADISON AVENUE, NEW YORK 16, N.Y.

OFFICES IN PRINCIPAL CITIES

SUBSIDIARIES
In England: PEABODY LIMITED *In Canada:* PEABODY ENGINEERING CORPORATION OF CANADA LTD.

1-288

FIRST AV.
M

IS MAIN STREET HEADED FOR A CRACK-UP?

Civic pride starts with good streets, and there's no better way to make sure Main Street, or any other street in town, will keep up appearances than to reinforce it with USS American Welded Wire Fabric.

There is no arguing concrete's compressive strength. It actually improves as the concrete ages. But concrete lacks tensile strength, and steel is at its best in tension. Both compressive and tensile strength are needed to preserve the structural integrity of a concrete slab. Steel welded wire fabric is the ideal high-tensile strength material for concrete reinforcement. It distributes stresses uniformly throughout the slab and controls temperature, moisture, load and soil shift cracking.

Actual measurement has shown that welded fabric's ability to control cracks adds 30% to the strength of the slab.

USS American Welded Wire Fabric is made of cold-drawn wire with a minimum yield strength of 60,000 psi and a minimum tensile strength of 75,000 psi. It is precision-made to your exact size and style requirements, ready for immediate placement. For full information, write American Steel and Wire, Dept. 1276, Rockefelier Building, Cleveland 13, Ohio.

Innovators in Wire USS and American are registered trademarks

USS

American Steel and Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco
Tennessee Coal & Iron Division, Fairfield, Ala.
United States Steel Export Company

Limited slip differentials . . . produced by Dana Corporation . . . are pulling new cars and trucks through mud and snow

The year 1961 will see fewer vehicles stuck in the mud—and snow. For almost every manufacturer of cars and light trucks offers the limited slip differential—made by Dana Corporation—as factory installed equipment.

The limited slip differential—produced by Dana Corporation . . .

- stops wheel spinning on ice or slick pavement, if one of the wheels can grip the road.
- enables your car or truck to pull out of sticky mud or loose sand if either wheel has traction.
- guards against dangerous swerves resulting from "wheel hop" on rough, bumpy roads.

Because of its safety and convenience features the new limited slip differential could prove as useful and as popular as the automatic transmission. To men who watch costs—the fleet operators—the limited slip differential is a feature that pays for itself in just one or two days of bad weather. Equipped with limited slip differentials at moderate cost, their fleets can maintain service and stay on schedules in the worst winter snows and the heaviest spring rains.

Next time you buy a car or truck, ask your dealer to demonstrate the advantages of the limited slip differential. Sold under many names—it's manufactured by Dana Corporation.

WRITE Dana for free copy of booklet that describes how and where the limited slip differential works.

DANA Spicer

DANA CORPORATION

Toledo 1, Ohio

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Obscenity—Motion Picture Censorship Ordinance Valid

Procedure prescribed by Chicago motion picture censorship ordinance which imposed an administrative interference on exhibition of moving pictures pending determination of their legality was within constitutional limits. *Zenith International Film Corp.* v. *City of Chicago, Ill.*, 183 F. Supp. 623 D., N.D. (Ill., E.D., Apr. 11, 1960)

Railroad Crossing—Grade Crossing Relocation—City Not Deprived of Due Process

Under circumstances of grade crossing relocation case, city which was made party to proceeding as soon as Public Utility Commission was informed that it was geographically involved was not deprived of due process of law merely because three hearings had been conducted prior to time it was made party. *City of Arnold* v. *Pennsylvania Public Utility Com'n*, 162 A2d 77 (Pa., Super. St., June 15, 1960)

Schools—Public Transportation of Children to Non-Profit Private Schools Valid

Held, statute authorizing town to transport, at public expense, children to non-profit private schools did not violate federal or state constitutional provisions respecting establishment of religion, but statute was unconstitutional insofar as it purported to make available, for transportation of pupils attending non-profit private schools, money derived from school fund which by constitution was inviolably appropriated to support and encouragement of public or common schools. *Snyder* v. *Town of Newtown*, 161 A2d 770 (Conn., Sup. Ct. Err., May 31, 1960)

Sewer Construction—Assessment of Benefits Upheld

Held, city sewer connection charge, levied in case of laying out of new sewers, was incidental expense of improvement without payment of which there would be no usable sewer and could be included in assessment for benefits growing out of improvement. City of *Los Angeles* v. *Offner*, 5 Cal. Rptr. 516 (Cal., Dist. Ct. App., 2nd Dist., Div. 2, June 6, 1960)

Tort Liability—Operation of Skating Rink—County Liable

Held, county exercised proprietary function when it operated for profit skating rink in county-owned park, and doctrine of sovereign immunity from tort liability was not applicable in respect to skater's injuries allegedly caused by negligent operation of rink. *Flowers* v. *Board of Com'rs of County of Vanderburgh*, 168 N.E.2d 224 (Ind., July 6, 1960)

Tort Liability—Painted Parking Stalls in Street—City Negligent

Evidence sustained finding that city was negligent in failing to place signs or devices of warning of wet paint marking parking stalls in street, and that city was not immune from suit and liability. *City of Austin* v. *Daniels*, 335 S.W.2d 753 (Tex., Apr. 20, 1960)

Sewer Systems—Flooding of Lands—Damages Denied

In action by resident property owners to recover damages from city resulting from flooding of lands due to overflowing of sewers, held property owners failed to sustain burden of proving that it was negligence of city that created condition and resulting floods. *Beck* v. *City of New York*, 199 N.Y.S.2d 584 (N. Y., Sup. Ct., Trial Term, Queens Cty., Part VII; Mar. 16, 1960)

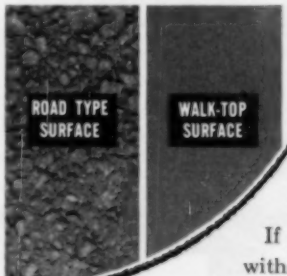
Water Systems—Supplying Water Outside City Limits—Act Invalid

Statute requiring city to furnish water to those outside its corporate limits without profit violated constitutional provision that no municipal corporation shall be subject to any restrictions other than all corporations of same class. *Sossamon* v. *Greater Gaffney Metropolitan Util. Area*, 113 S.E.2d 534 (S.C., Mar. 23, 1960)

Utilities—Cost of Relocation of Utility Facilities

Held, utility relocation art which changes common-law rule and requires state to pay non-betterment costs of relocation of utility facilities in highways is valid. *State Road Com'n of Utah* v. *Utah Power & Light Co.*, 353 P.2d 171 (Utah, May 27, 1960)

SEE THE DIFFERENCE WALK-TOP MAKES!



Walk-Top (a fibre-filled emulsified asphalt) not only smooths out rough, abrasive pavements; it also puts *color* . . . black, red or green . . . on play areas, walks and drives.

Park officials across the nation are specifying Walk-Top with confidence. If you are not now using it, get in touch with our nearest office and discover how easy it is to eliminate surfacing problems.

American Bitumuls & Asphalt Company

320 MARKET STREET, SAN FRANCISCO 20, CALIFORNIA
Perth Amboy, N. J. · Baltimore 3, Md. · Cincinnati 38, Ohio · Atlanta 8, Ga. · Mobile, Ala. · St. Louis 17, Mo. · Tucson, Ariz. · Portland 8, Ore. · Oakland 1, Calif. · Inglewood, Calif. · San Juan 23, P.R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

DO VOTERS LIKE AUTOMATIC VOTING MACHINES?

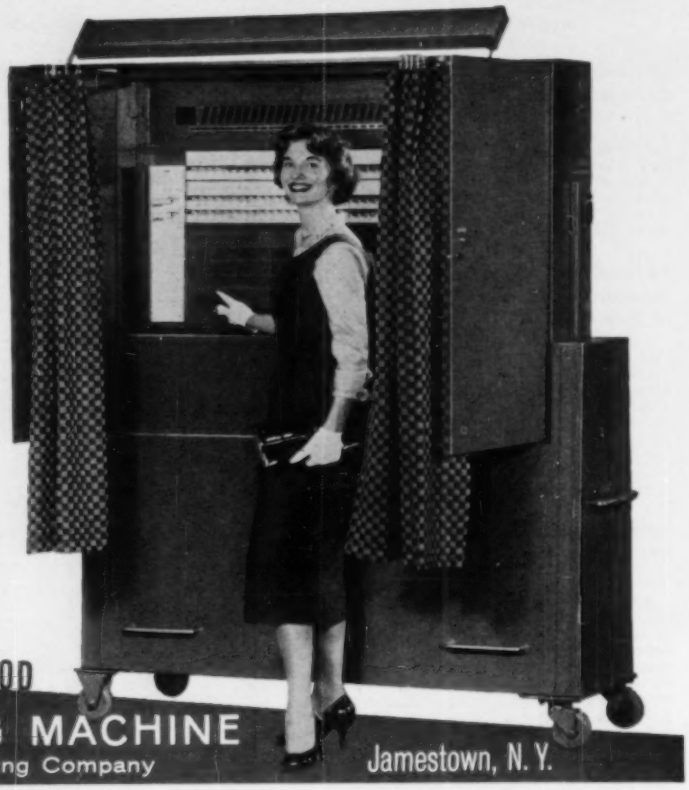
In an Oklahoma municipal election last April, polling place official interviewed every voter. Here are the results as published in the local paper

While voting:

No difficulty	99.93%
Some difficulty	0.07%

After voting:

For machines	98.58%
Against machines	1.42%



PRODUCTS FOR THE PUBLIC GOOD

AUTOMATIC VOTING MACHINE

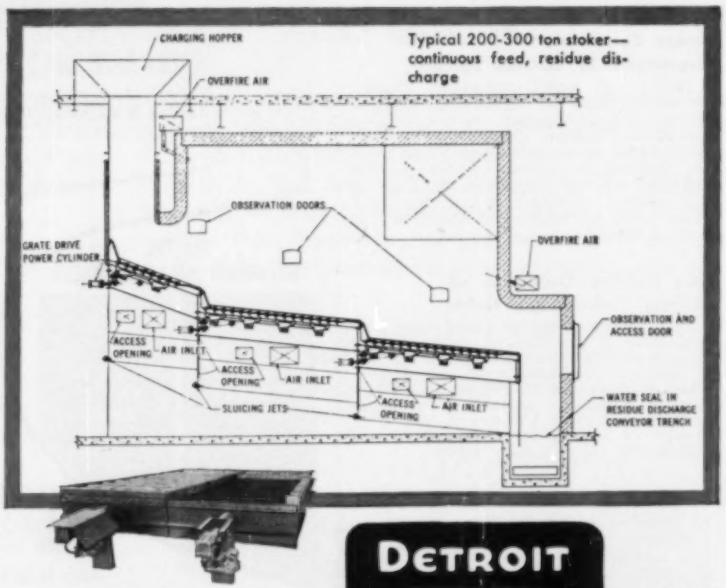
division of Rockwell Manufacturing Company

Jamestown, N. Y.

DETROIT
RECIPROCATING GRATE
INCINERATOR STOKER
FOR **MUNICIPAL** AND
INDUSTRIAL
INCINERATORS

- Alternate lateral rows of reciprocating grates convey the refuse mass through the firing chamber, tumbling and tearing it, to expose its maximum surface to flame, and without manual poking.
- High resistance air metering grates prevent bare spots and blow holes.
- Hydraulic drive, automatically controlled for selected frequency and length of grate-reciprocating strokes.
- Factory-assembled for shipment in modular units (single or multiple) for any size incinerator, assure a minimum of field erection labor.
- Full details and specifications in Bulletin 701. ASK for IT.

Also Available—
Detroit Rocker Grate Incinerator Stoker



Two-unit stoker with drives and controls, being shop-assembled

DETROIT
SINCE 1898
STOKERS

DETROIT STOKER COMPANY
DIVISION OF UNITED INDUSTRIAL CORPORATION
MAIN OFFICE AND WORKS • MONROE, MICHIGAN
District Offices or Representatives in Principal Cities

RECENT CITY MANAGER APPOINTMENTS

E. C. Drumb, Plano, Texas | *W. M. Howe, Montrose, Colo* | *W. E. Peebles, Torrence, Calif.* | *E. L. Koch, Marceline, Mo.* | *G. D. Adkins, Gulfport, Fla.* | *O. C. Neumann, Granby, Conn.*

GEORGE D. ADKINS, manager of Canon City, Colo., has been appointed manager of Gulfport, Fla., succeeding C. Joseph Babineau. Mr. Adkins was previously assistant city manager, San Antonio, Texas, and a minister.

ROBERT K. ARMSTRONG, assistant director, Public Works Management, Ninth Naval District, Great Lakes, Ill., has been appointed manager of Lititz, Pa., succeeding David J. Bauer.

E. L. BLACKWELL, manager of Newberry, S. C., for the past 12 years, has been appointed first manager of Lewisburg, Tenn. Mr. Blackwell was previously manager of Florence, S. C.

JAMES O. BRANCH, a retired Army colonel, has recently been appointed the first manager of Smithfield, Va.

MAXWELL P. BUCK has been appointed manager of Monmouth, Maine, succeeding J. Merton Wyman.

CLARENCE J. BUCKLEY, formerly manager of Milbridge and Boothbay, Maine, was recently appointed manager of Milbridge, Maine, succeeding Rollin H. Thurlow.

ROSCOE L. CLIFFORD, city engineer and planner of Auburn, Maine, has been appointed manager of Calais, Maine, succeeding Emerson H. Higgins.

E. C. DRUMB, manager of Alice, Texas, has been appointed manager of Plano, Texas, succeeding Joe Marchman. Mr. Drumb was formerly city engineer of Denison, Texas.

JOE B. EDGE, city clerk of Niceville, Fla., has been appointed manager of that city, succeeding Gene Freiwald. Mr. Edge was previously in the construction business.

GARLAND P. FRANKS, manager of Sweetwater, Texas, for seven years, is now manager of Vernon, Texas. Mr. Franks was previously manager of Wichita Falls, Pampa, Sherman, San Angelo, Waco, and Mt. Pleasant, Texas, and administrative assistant at Wichita Falls, Texas.

J. B. HENDERSON, manager of Homestead, Fla., for nearly five years, has been appointed manager of Boynton Beach, Fla., succeeding Louis J. Smitzes. Mr. Henderson was formerly assistant manager of Miami and sheriff of Dade County, Fla.

RODNEY D. HODGE, a superintendent of mines for 12 years, has been appointed manager of Wakefield, Mich., succeeding William Jacobson.

WESLEY M. HOWE, assistant manager of Winston-Salem, N. C., has been appointed manager of Montrose, Colo., succeeding Donald R. Wageck.

ELLWOOD L. KOCH, manager of Ferguson, Mo., has been appointed manager of Marceline, Mo., succeeding Cole Hendrix, now manager of Gladstone, Mo.

DUDLEY N. LAPHAM, manager of La Mesa, Calif., for four years, has been appointed manager of Garden Grove, Calif., succeeding William Richards. Mr. Lapham was previously assistant to the manager at Long Beach, Calif.

ALLEN B. LOCKE, JR., administrative assistant at Edina, Minn., has been appointed manager of Bemidji, Minn., succeeding James Deneen, who retired.

KENNETH E. LONG, city engineer of Ironwood, Mich., has been appointed manager of that city, succeeding Lloyd Waterstraut, who had been manager for 11 years.

GLENN H. MARCUSSEN, city engineer of Oceanside, Calif., has been appointed manager of Coalinga, Calif., succeeding J. Walter Barham.

JAMES E. MARSHALL, city engineer of South Boston, Va., has been appointed manager of Clifton Forge, Va., succeeding A. Kyle Roop, Jr.

EDMUND W. MEISENHELDER III has been appointed the first manager of Cookeville, Tenn. Mr. Meisenhelder was previously manager of Fernandina Beach, Fla., and Park Forest, Ill.

HORACE E. MENASCO, facilities manager of Derby, Kan., has been appointed manager of Colby, Kan., succeeding E. S. Burno.

HAROLD E. MILLSPAUGH, clerk-treasurer of Walled Lake, Mich., has been appointed manager of that city, succeeding George A. Shaw. Mr. Millspaugh was previously building inspector and street superintendent in Walled Lake.

OTTO C. NEUMANN has been appointed first manager of Granby, Conn. Mr. Neumann was previously employed by the State of New York.

ROBERT H. PECK, manager of Washington, N. C., is now manager of Chapel Hill, N. C., succeeding Thomas D. Rose, who is retiring. Mr. Peck was previously manager of Mooresville and Sanford, N. C.

WADE E. PEEBLES, director of public works at Torrence, Calif., has been appointed manager of that city, succeeding George W. Stevens.

WALDO M. PORR, director of public works and assistant manager of Enid, Okla., has been appointed manager of that city, succeeding Gerald D. Wilkins.

FRANCIS F. RAINEY, assistant city manager of Southern Pines, N. C., has been appointed manager of that city, succeeding Louis Scheipers, Jr.

ALBERT H. RAMSEY, clerk-treasurer of Bedford, Va., has been appointed manager of that city, succeeding G. R. House, Jr.

CHARLES W. REIMAN, assistant manager and controller-clerk of San Buenaventura, Calif., has been appointed manager of that city, succeeding Lawrence E. Olson, who retired on June 30, 1961.

S. A. Roos, director of public works, Albany, Ga., is now manager of that city, succeeding Carey C. Burnett.

LEO ROSBACH of Eloy, Ariz., has been appointed manager of that city, succeeding Bill Ballard.

CLAYTON H. SCHMITT has been appointed manager of Yuma, Colo., succeeding J. Pershing DeVore, who is now coordinator for Longmont, Colo.

ROBERT C. SHARP has been appointed manager of Leesburg, Va. He was previously employed by the Fairfax County Sanitation Department.

GEORGE A. SHAW, manager of Walled Lake, Mich., for five years, is now manager of Three Rivers, Mich., succeeding Samuel C. Gesko, Jr.

RICHARD E. SIMMS, a local businessman in Lindsay, Okla., was recently appointed manager of that city, succeeding A. E. Ash. Mr. Simms was previously in the highway construction business.

DAVID M. SINGER, a retired Air Force colonel, has been appointed manager of DeLand, Fla., succeeding H. W. Johnson.

ROCHIE SMITH, manager of Exeter and Garland, Maine, was recently appointed manager of Dexter, Maine, succeeding Vance E. Dearborn.

ROY E. SWENSON, assistant manager of Richfield, Minn., has been appointed manager of Minnetonka, Minn.

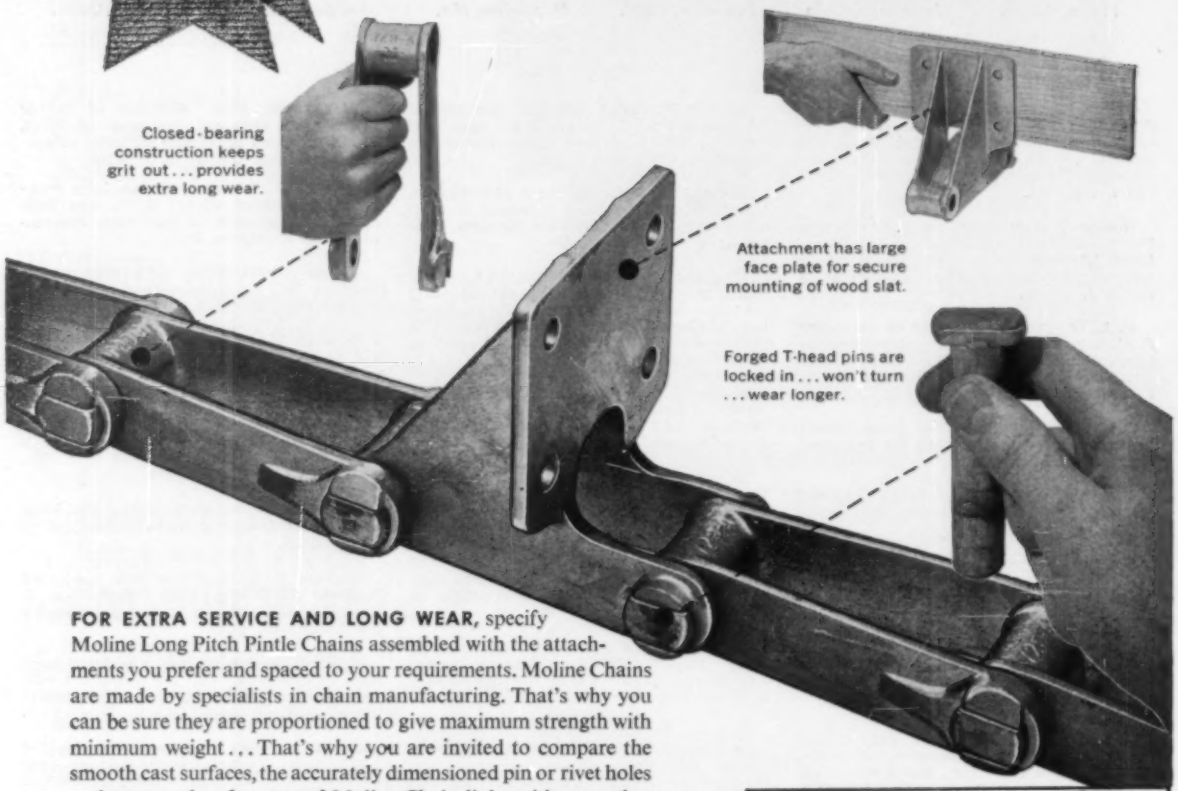
HAROLD B. VASEY, manager of Winslow, Ariz., has been appointed manager of Zion, Ill. Mr. Vasey was previously manager of Montrose, Colo., Brookfield, Mo., Carlisle, Pa., and Mankato, Minn.

(Continued on page 195)

When selecting chain for rugged service in sewage treatment plants, remember...

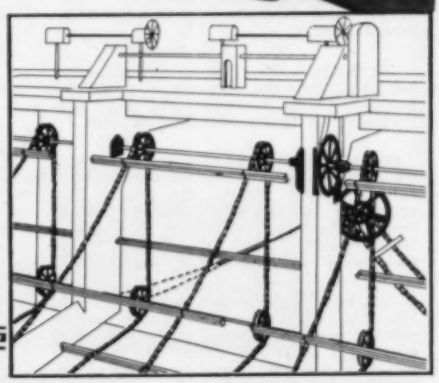
60 YEARS

Specialization makes a big difference!


Closed-bearing construction keeps grit out... provides extra long wear.
Attachment has large face plate for secure mounting of wood slat.
Forged T-head pins are locked in... won't turn ...wear longer.

FOR EXTRA SERVICE AND LONG WEAR, specify Moline Long Pitch Pintle Chains assembled with the attachments you prefer and spaced to your requirements. Moline Chains are made by specialists in chain manufacturing. That's why you can be sure they are proportioned to give maximum strength with minimum weight... That's why you are invited to compare the smooth cast surfaces, the accurately dimensioned pin or rivet holes and many other features of Moline Chain links with any other make. Moline's "*triple checking*" test procedures guarantee their uniform, high quality.

Moline Chains are interchangeable with "standard" chains of other manufacture and are available in Malleable, Promal or special analysis metal having special corrosion resistance.



For complete information and prices, phone your local Moline distributor or write direct to the factory today!

LEADERS FOR 60 YEARS

Moline MALLEABLE Chains

MOLINE MALLEABLE IRON CO.

St. Charles, Illinois

Specializing in the Manufacture of Chains

Recent City Manager Appointments

(Continued from page 193)

MARSTON B. WINEGAR, manager of Toledo, Ore., has been appointed manager of Kennewick, Wash., succeeding William E. Hansen. Mr. Winegar was formerly city engineer of Kennewick.

FRANK A. WINSTED, formerly manager of Ponca, Okla., was recently appointed the first manager of Stillwater, Okla. Mr. Winsted was previously manager of Cherokee, Okla.

HOOD C. WORTHY, manager of Chester, S. C., for the past 16 years, has been reappointed manager of that city.

JOHN L. YOUNG, manager of Safety Harbor, Fla., has been appointed manager of Dunedin, Fla., succeeding Herbert R. Dear, retired.

ORIN F. NOLTING
Executive Director
International City Managers' Association

Health Club for Fitness Program

The Abilene, Texas, City Commission is purchasing memberships in the local health club on a trial basis for members of the Police Department. If the experience proves satisfactory, the city plans to include the Fire Department.

Services to be rendered by the Abilene Health Club include full use of all available equipment (estimated value—$15,000) including the physical training apparatus as well as steam room, showers, towels, etc. In addition, the Health Club will provide individual supervision and instruction to the city employees, maintain employee records and remain open from 7 a.m. until 8 p.m. for the convenience of the city employees participating in the program. Each man will receive training for three sessions a week.

By this means City Manager Robert Tinstman points out that Abilene can initiate a comprehensive physical fitness training program with little, if any, outlay or investment in building or equipment. Moreover, the city also avoids the necessity of hiring a competent full-time instructor whose salary would undoubtedly exceed $4,000 per year. Following the full evaluation period, the city government may then consider alternative means of continuing the program.

The health studio also is convenient and readily accessible to the employees going on duty or immediately thereafter. As appropriate, physical-fitness tests will be given the members of these departments to determine their capacity to discharge their duties. ◄◄

IT'S THE SAME OLD STORY... the best looking lawns are cut by a Locke

No wonder! Lockes trim and mow in **one operation,** always cutting ahead of the tractor rolls . . . a unique feature leaving no uncut, matted down grass, since the entire mower travels on cut grass.

The 1/3 overhang of the cutting units eliminate half of your secondary trimming operation; saves time, energy and money. Locke Triplexes with their designed-in synchronized roller chain drive, guarantees smooth operation; a safe, sure cut on wet or dry grass, year-in-year-out.

Be proud of your lawn! Cut and trim it, economically, beautifully with a Locke. Your Locke Service Dealer is ready to show you its many exclusive features . . . demonstrate its lifetime values. See him today!

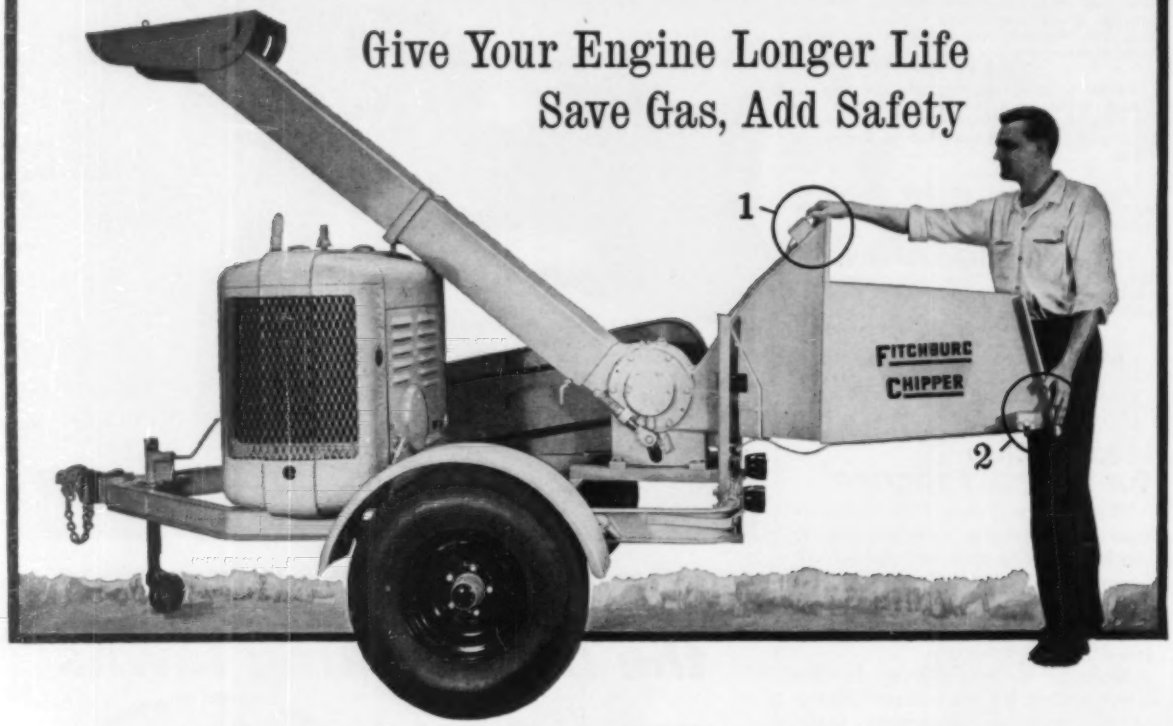
2 Models—Single or Triplex
4 Basic Sizes—25", 30", 70", 75"; Plain or reverse.

Invest in a Locke!

Locke POWER LAWN MOWERS
A product of The Locke Steel Chain Co.
Send for literature. **1315 Connecticut Ave., Bridgeport 1, Conn.**

2 NEW FITCHBURG CHIPPER FEATURES

Give Your Engine Longer Life
Save Gas, Add Safety



1 **EXTRA PROTECTION** for your crews with this NEW SAFETY STOP SWITCH that stops all moving parts of the chipper within seconds. Switch is within easy reach at rear so operator can flip it without moving from feed position. An important new feature of the Fitchburg Chipper, *already considered safest* because it has no hard-to-control flywheel.

2 **GREATER ECONOMY** with this NEW SOLENOID SWITCH* which allows the operator to quickly idle the motor between actual brush feedings. With the motor idling, you save on gasoline and engine wear; and there's less noise, which pleases the public. Your operator can use the switch easily because it is at the rear and handy.

CHIPPING IS SMOOTHER and faster with a Fitchburg because of its exclusive *spring activated feed plate.* This patented feed plate "gives" *automatically* under pressure. You can chip even large limbs (up to rated capacity) without killing the engine. And your crews are safer because the feeding action is more positive, smoother, with less whipping of the brush.

CHIPPING IS MORE EFFICIENT with a Fitchburg. The exclusive feed plate allows wood to be chewed up in small bites. This takes less power, and the engine can be run at lower r.p.m.—which is more efficient, saves you gas and cuts engine wear.

TROUBLE-FREE Fitchburg Chippers stay out of your shop so you don't lose valuable man-hours. These rugged machines are the choice of tree surgeons, line clearance contractors and others—men who depend on Chippers day after day to make money. Blades are made from special alloy steel to hold a keen edge for a long time, even with hard use. Fitchburg Chippers are well-engineered, come in four sizes to meet your needs: the largest handle limbs as thick as seven inches with ease.

A FREE BOOK "Chip Dollars" should be in your hands if you deal with brush disposal. 20-pages. Write for free copy—Dept. AC-111

*optional equipment

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Nov. 8-9—Lincoln, Neb.

NEBRASKA SEWAGE AND INDUSTRIAL WASTES Assoc. Annual Meeting (Lincoln Hotel). Sec.-Treas., E. Bruce Meier, Kirkham, Michael & Assoc., 508 South 19th St., Omaha 2, Neb.

Nov. 12-17—London, England

PUBLIC WORKS & MUNICIPAL SERVICES CONGRESS. Annual Meeting (Olympia Hotel). Write: The Municipal Agency Ltd., 3/4, Clements' Inn, London, W. C. 2, England.

Nov. 13-14—Hot Springs, Ark.

ARKANSAS MUNICIPAL LEAGUE. Annual Meeting (Arlington Hotel). Exec. Dir., Glenn G. Zimmerman, 416 Maple Street, North Little Rock, Ark.

Nov. 13-15—Asheville, N. C.

AMERICAN WATER WORKS ASSOCIATION. North Carolina Section. *Joint Meeting with—*

NORTH CAROLINA WATER POLLUTION CONTROL ASSOC. Annual Meeting (George Vanderbilt Hotel). Sec., T. Z. Osborne, Asst. Dir. of Public Works, Greensboro, N. C.

Nov. 13-17—Detroit, Mich.

AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Meeting (Cobo Hall). Exec. Dir., Berwyn F. Mattison, M. D., 1790 Broadway, New York 19, N. Y.

Nov. 14-17—Atlantic City, N. J.

NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Meeting (Haddon Hall). Dir., Robert H. Fust, 603 Trenton Trust Bldg., Trenton 8, N. J.

Nov. 15-16—Indianapolis, Ind.

INDIANA WATER POLLUTION CONTROL Assoc. Annual Meeting (Hotel Washington). Sec.-Treas., Victor Wagner, 1330 West Michigan Street, Indianapolis, Indiana.

Nov. 26-30—Detroit, Mich.

AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Statler-Hilton Hotel). Exec. Dir., W. C. Dutton, Jr., Suite 410, 2400 16th St., N.W., Washington 9, D. C.

Nov. 26-30—Miami Beach, Fla.

INTERNATIONAL CITY MANAGERS ASSOC. Annual Meeting (Fontainbleau Hotel). Exec. Dir., Orin F. Nolting, 1313 E. 60th Street, Chicago 37, Ill.

Nov. 27-Dec. 1—Stillwater, Okla.

OKLAHOMA WATER, SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Student Union, Okla. State University). Sec.-Treas., H. M. Crane, 3400 North Eastern, Oklahoma City 5, Okla.

Nov. 30-Dec. 2—Miami Beach, Fla.

NATIONAL MUNICIPAL LEAGUE. Annual Meeting (Fontainbleau Hotel). Exec. Dir., Alfred Willoughby, 47 East 68th St., New York 21, N. Y.

Dec. 7-8—New York, N. Y.

THE TAX INSTITUTE. Annual Meeting (Barbizon-Plaza Hotel). Exec. Dir., Mabel Walker, 457 Nassau Street, Princeton, New Jersey.

Dec. 11-14—St. Louis, Mo.

WEED SOCIETY OF AMERICA. Annual Meeting (Sheraton Jefferson Hotel). Bus. Mgr., Walter C. Jacob, Agronomy Dept., University of Illinois, Urbana, Ill.

***Jan. 8-12, 1962—Washington, D. C.**

HIGHWAY RESEARCH BOARD. Annual Meeting (Sheraton-Park Hotel). Director, Fred Burggraf, 2101 Constitution Ave., Washington, D. C.

***Jan. 18-19, 1962—New York, N. Y.**

NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Park Sheraton Hotel). Exec. Sec., R. C. Sweeney, 55 Church St., White Plains, N. Y.

***Jan. 25-27, 1962—Hollywood, Calif.**

CALIFORNIA STREET AND HIGHWAY CONFERENCE. Annual Meeting (Hollywood-Roosevelt Hotel). Exec. Sec., Bob Glenn, Inst. of Transportation and Traffic Engineering, Univ. of Calif., Berkeley 4, Calif.

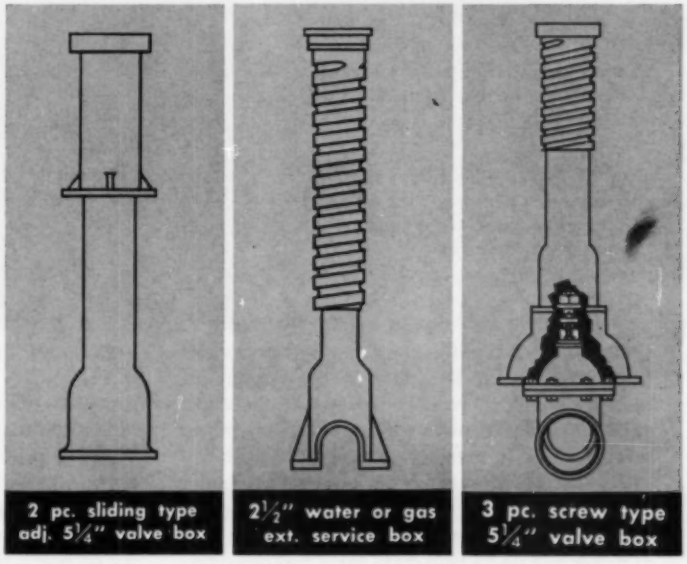
(Continued on page 199)

BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire—you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



2 pc. sliding type adj. 5¼" valve box

2½" water or gas ext. service box

3 pc. screw type 5¼" valve box

Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

SINCE 1930
BUFFALO PIPE & FOUNDRY CORP.

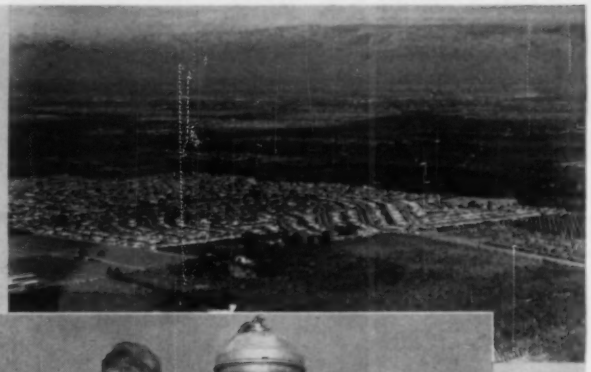
Write or wire Dept. J for Bulletin M11.

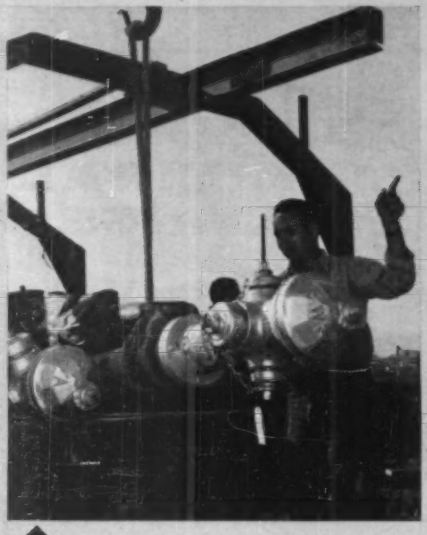
BOX 55—STATION B DE 6764 BUFFALO 7, N. Y.

IOWA Valves and Hydrants

by the carload to meet San Jose Water Works' growing requirements

Glimpse of new subdivision of San Jose, California. City has grown from 95,280 to 202,571 in past ten years.





Unloading scene as IOWA hydrants are delivered by the carload to San Jose Water Works.

Two IOWA gate valves and a new hydrant being installed. Hundreds of these Iowa products are important components of San Jose's modern system.

Carloads of IOWA gate valves and hydrants were purchased by the San Jose Water Works (an investor-owned, private company established in 1866) for installation in their rapidly expanding system which serves seven cities and unincorporated areas in Santa Clara County, California.

Over 17,000 new water service connections were made in the last two years along 1200 miles of water mains to help care for a metropolitan population (Approx. 306,000) which has doubled since 1950.

IOWA products were selected to be a part of the San Jose Water Works' growth because of their proved dependability with minimum maintenance and assurance of long-life performance.

Every year more and more IOWA valves and hydrants are installed to serve the needs of growing communities like San Jose. Experience shows that IOWA products have that extra quality of materials, that extra-precise fitting and assembly that makes for longer life and easier maintenance.

Let us send you details on the complete IOWA line

IOWA VALVE COMPANY
Oskaloosa, Iowa
Subsidiary of James B. Clow & Sons, Inc.

a CLOW Subsidiary

Conventions—When and Where

(Continued from page 199)

***Jan. 29-31, 1962—New Orleans, La.**
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual meeting (St. Charles Hotel). Sec.-Treas., W. K. Parr, Box 619, Ann Arbor, Mich.

***Mar. 1-2, 1962, Urbana, Ill.**
ILLINOIS TRAFFIC ENGINEERING CONFERENCE. Annual meeting (Illini Union Bldg., University of Illinois). Exec. Sec., R. K. Newton, 116D Illini Hall, Champaign, Ill.

Mar. 4-7, 1962—San Francisco, Calif.
AMERICAN ROAD BUILDERS ASSOCIATION. Annual Meeting (Sheridan-Palace Hotel). Exec. V. P., Louis W. Prentiss, 600 World Center Bldg., Washington 6, D. C.

June 17-22, 1962—Philadelphia, Pa.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Trade and Convention Center). Executive Secretary, Raymond J. Faust, 2 Park Ave., New York 16, N. Y.

Sept. 30-Oct. 3, 1962—N. Orleans, La.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention. Exec. Dir., Robert D. Bugher, 1313 E. 60th St., Chicago 37, Illinois.

Sept. 30-Oct. 3, 1962—Boston, Mass.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (The Statler Hilton Hotel). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

Oct. 7-11, 1962—Toronto, Ont., Can.
WATER POLLUTION CONTROL FEDERATION. Annual Convention (Royal York Hotel). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Avenue, N. W., Washington 16, D. C.

Fresno Starts City Bus System

The City of Fresno, Calif., has completed negotiations to start municipal operation of its bus service November 1, 1961.

Fresno has leased 32 used GMC coaches, automatic fare boxes, bus-stop benches, and a money-sorting machine from the present bus company. The lease runs for six years at an annual rental of $50,000. It includes an option to purchase the 32 leased used buses at the end of that period for $65,000.

Ten new air conditioned GMC coaches have been leased from Personal Property Leasing in Hollywood.

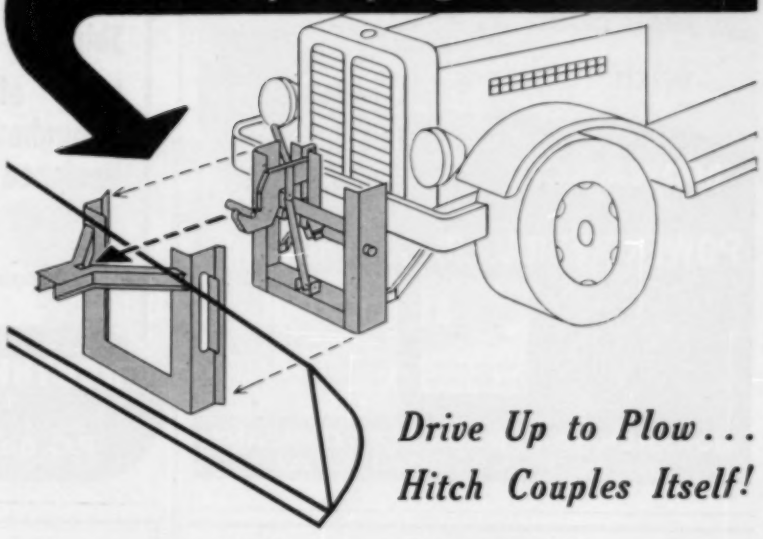
Plans are underway for the installation of a ride-validation program and the building of a new bus terminal.

Fresno is establishing its own transportation department. Thomas W. Burke has been named as the new manager to head this department. Burke was vice-president and general manager of the Inglewood City Lines for 14 years. ◄◄

Hitch Snow Plow to Truck . . . Without Leaving the Cab

Revolutionary HUSTING HITCH Couples Itself

NEVER BEFORE!
A Quick-Snap Coupling for Snow Plows!



Drive Up to Plow . . .
Hitch Couples Itself!

SAVES TIME, WORK and MONEY

Any Truck Hitches to Any Plow . . . with a HUSTING HITCH

All snow plows and trucks are interchangeable with Husting Hitches. Any truck can couple to any plow . . . whether it's a Vee, Rigid One Way, Reversible or a Trip Blade. You can hitch snow plow to truck in seconds . . . alone . . . without even leaving the cab. The Husting Hitch does it for you. You just drive up . . . and it couples itself. Disengaging is just as easy.

Spring-loaded pins snap into slots when truck drives up to plow. Your standard hydraulic controls then lift the plow . . . and you're on the way without ever leaving the cab. More than 1,000 Husting Hitches are now in use. From New York to Minnesota, these installations prove our claims . . . Our easiest sales are made to men who have seen the Husting Hitch in operation.

HUSTING FLEXIBLE LINK Increases Snow-Plow Maneuverability

A new **Flexible Link** gives **Husting-Hitched** plows extra freedom to follow difficult roadbed contours at intersections and in alleys.

The **Flexible Link** lets plow rotate around a central axis. Springs hold plow level in "carry" position . . . improve control near ditches.

HUSTING HITCHES Are Rugged . . . Economical . . . Foolproof

Patented **Husting Hitch** (with or without **Flexible Link**) speeds the work . . . saves time and money. It's a rugged, dependable labor-saver.

Insist on a **Husting Hitch** with your next plow order . . . no matter what make of snow plow you buy. Husting Hitches fit them all.

Specify HUSTING HITCHES on Your Next Snow Plow Order

All Snow Plow Makers Can Supply HUSTING HITCHES

Write For Free Literature

KASTEN MANUFACTURING CORPORATION

Market 9-2311 **Allenton, Wisconsin**

faster
snow
removal
at
less cost
with
Less time per snow plow job, more jobs per day with a dependable, quick-acting Monarch Control. Instant up-and-down action from the cab with a flick of the wrist . . . automatically! Quickly installed. Don't delay — see your dealer today. Free folder on request.
MONARCH
POWER HYDRAULIC CONTROLS
HY-LO JACK
Fan Belt Driven
DYNA-MIGHT
Battery Operated
MONARCH ROAD MACHINERY COMPANY
1363 Michigan St., N.E., Grand Rapids 3, Mich., USA

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

PROMPT SHIPMENT

Inquiries and orders solicited

NORTHERN GRAVEL COMPANY
Muscatine, Iowa
P.O. Box 307 Amherst 3-2711

SMOKE SAVES TOWN DOLLARS!

A new smoke bomb technique, for testing leaks in sewage lines, is saving several municipalities thousands of dollars. McPherson, Kansas, for example, stopped sewer infiltration by detecting the most common leaks from poor joints, poorly constructed manholes, complete breaks, uncapped, abandoned lines and roof drains illegally connected to the sanitary sewer. As a result, construction of a new disposal plant was forestalled by several years. Moreover, this was done at a cost of only a few cents a foot, after the town had experimented unsatisfactorily with other methods costing as much as fifty cents per foot.

The technique consists in two men, using Superior Smoke Bombs with a portable blower. Smoke issuing out of the ground or from rooftops pinpoints leaks or illegal drain connections.

Superior Three Minute Smoke Bombs
25,000 cubic feet of smoke **$8.00 per doz.**

Superior Five Minute Smoke Bombs
100,000 cubic feet of smoke **Six for $12.00**

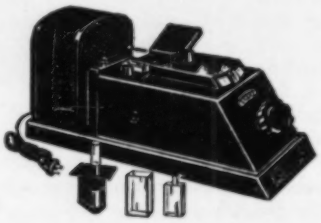
Mailable • All Prices F.O.B. Factory

For complete information write:

SUPERIOR SIGNAL CO., INC.
P. O. Box 700 Spotswood, N. J.

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street, New York, N. Y.

MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Pavement Testing in the Field

NON-DESTRUCTIVE DYNAMIC TESTING OF SOILS AND HIGHWAY PAVEMENTS. *Bulletin* 277, *Highway Research Board*, 2101 *Constitution Ave., Washington* 25, *D. C.* 74*pp.* $1.60.

Five papers presented at the 39th Annual Meeting form the basis of this bulletin. They include a survey of dynamic methods, the measurement and interpretation of surface vibrations, non-destructive testing, a non-dimensional approach to static and vibratory loading and stresses under circular flexible foundations. The first is a rather complete presentation describing dynamic methods of testing in various countries and the summary of the present status of this work. The others describe various approaches and methods of non-destructive testing, the apparatus involved and the conclusions for each. If one wishes to perform tests of this type, *Bulletin* 277 adequately describes the procedure to use and the form of results which he can obtain by their use.

Research on Development of Cities

THE PRE-INDUSTRIAL CITY: PAST AND PRESENT—*By Gideon Sjoberg. The Free Press of Glencoe, Ill.* 1960. 353 *pp.* $6.75.

This comprehensive survey of the pre-industrial city points up the fact that the cities of today are influenced by the same factors affecting cities in the past. It reveals why cities have arisen, prospered, and declined or disappeared. The student of municipal government will find here an important historical dimension added to his understanding of cities. He will be more keenly aware of those influences, social, religious, and political, which tend to stabilize a city and he will understand why these same influences often stand athwart progress. He will also have a deeper awareness of the factors that bring progress.

Traffic

TOWN AND TRAFFIC IN THE MOTORAGE—*By P. H. Bendtsen. Danish Technical Press,* 31, *V. Farimagsgade, Copenhagen K, Denmark.* 1961. 171 *pp. Approx.* $4.21.

An interesting little text that shows the trouble these picturesque little European towns are having as their streets become cluttered with Volkswagens, Renaults, and Fiats in this period of rising economic levels.

Many will receive some wry satisfaction over the amount of earnest study directed to practice in the United States. The book has only casual value to students of traffic problems here. It is fun to read of "kerbside" parking and speeds in kilometers per hour.

Urban-Renewal Study

SECOND INTERIM REPORT ON THE URBAN RENEWAL IMPACT STUDY. *ACTION-Housing, Inc., No.* 1 *Gateway Center, Pittsburgh* 22, *Pa.* 1961. 28 *pp.* $1.

This report points up the over-all effects of coordinated city and county-wide urban renewal on the people and economy of Pittsburgh and Allegheny County.

It discusses coordination of urban renewal with highway programs and the relationship between population, family formation, and urban-renewal.

Planning

NEIGHBORHOOD PLANNING—*By V. Joseph Kostka. The University of Manitoba, Community Planning, Winnipeg* 9, *Manitoba, Can.* 1961. 160 *pp.* $4.

Our neighbors to the north produce a paper-bound text with more practical ideas on orderly residential growth than we have seen in a long time. The subdivision layouts and design factors are clear and reasonable. The analyses of neighborhoods and their needs are enlightening. The discussion of "mixed" developments, single family, row houses, duplexes and apartments is helpful.

Regional Government

1400 GOVERNMENTS—*By Robert C. Wood with Vladimir V. Almendinger. Harvard University Press, Cambridge* 38, *Mass.* 1961. 267*pp.* $5.75.

In this last of the series on the growing urban region identified as Metropolitan New York, the authors appear to view the future with pessimism, without much hope of change. They explain that the numerous local governments compete with each other and tend to cancel themselves out; and that regional organizations such as the Port of

(Continued on page 203)

POWERFUL, NEW
M&M BRUSH CHIPPER
handles limbs up to
8" diameter

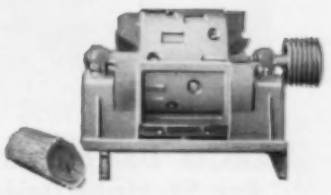
107

AMERICA'S
NO. 1 BRUSH CHIPPER

M & M's exclusive design of small, staggered and tapered cutting knives in the large cylinder allows chips to be *shaved off* . . . not cut off; makes it possible for this new chipper to handle 8 inch logs without creating impact shock responsible for damaging bearing and clutch wear.

Unique twin-bar design allows the chipper to produce either large or small chips . . . a profit-making feature, since small chips have many uses.

The heavy-duty M & M chipper has a built-in blower to regulate direction and distance of chips. Large, heavy rotating cylinder in between heavy-duty roller bearings eliminates overhanging flywheel. All-welded, special alloy steel construction



of simple design assures trouble-free operation and low maintenance costs.

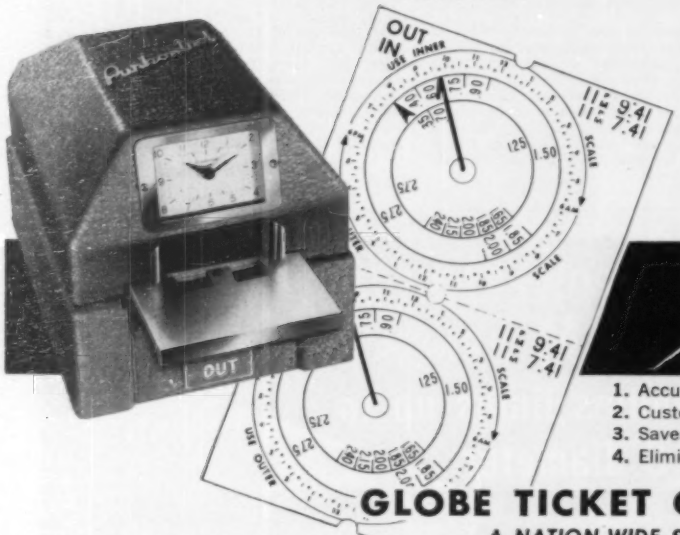
With the addition of this heavy-duty model, Mitts & Merrill manufactures a complete line of chippers in sizes and capacities for any brush disposal requirement. Write today for complete information.

LARGE AND SMALL M&M HANDLES THEM ALL!

MITTS & MERRILL • 1003 So. Water Street • SAGINAW, MICHIGAN

BUILDERS OF WORK-SAVING, MONEY-SAVING AND MATERIAL RECLAIMING MACHINERY SINCE 1854

BE SURE... BE SAFE... Be Wise

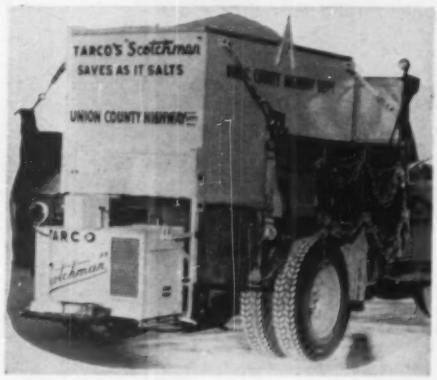


"Parkontrol®"
FEE IMPRINTER

1. Accurate Fee Imprinting
2. Customized Rate Structure
3. Saves Time
4. Eliminates Embarrassment
5. Provides Customer Receipt
6. Largest Dial in the Industry—Avoids Errors
7. Insured Revenue Control

GLOBE TICKET COMPANY
A NATION-WIDE SERVICE
112 N. 12th STREET PHILA. 7, PA.

For further information write:



TARCO *Dump Body* HOPPERS for Straight De-icing Salts

Gravity feed . . . **no moving parts.**

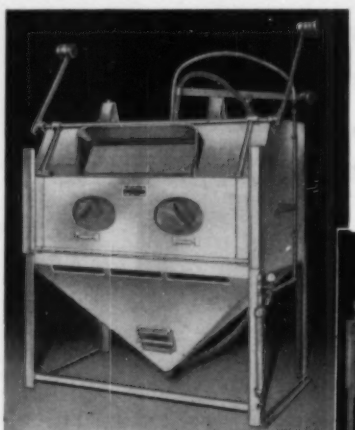
Tarco "Watchman" Hoppers in two sizes: **Model 3Y—3 cu. yd.; Model 5Y—5 cu. yd.** (Model 1Y—1 cu. yd. for "Jeeps" and pickups). **All welded** steel. **Top screens** and **tie-down clamps.**

Rugged "Watchman" Hoppers used with Type V-3 Electric Cab-Controlled "Scotchman" Spreaders make **ideal one-man operated spreaders.** Spread with body in normal "down" position. Install or remove the Hopper and Spreader in 20 minutes.

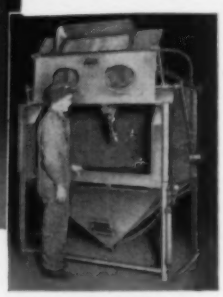
See your Tarco "Scotchman" Dealer about liberal trade-in allowances.

TARRANT MFG. CO.
23 Jumel Place, Saratoga Springs, N. Y.

BLAST CLEAN WATER METERS



For Speed and Thoroughness!



RUEMELIN BLAST CABINETS effectively clean water meters, valves and pipe fittings, removing all foreign matter very rapidly. Built in several sizes. Units available with rotary tables.

Write for Bulletin 32-C and price data.

RUEMELIN MANUFACTURING CO.
3902 N. PALMER ST. • MILWAUKEE 12, WIS., U. S. A.
Manufacturers and Engineers SAND BLAST AND DUST COLLECTING EQUIPMENT, WELDING FUME COLLECTORS

(Continued from page 201)

New York Authority simply accommodate their programs to what they feel is the unplanned spread of urbanism in all directions. They report that transit facilities are being developed piecemeal and appear resigned to the future of the region as one structured by the automobile.

Nevertheless, they recognize that this is the type of development that the public wants. They found no evidence indicating interest in any broad gauge regional development. Moreover, they find a willingness on the part of the taxpayer to pay the added costs.

The text should be a somewhat humbling reminder to many of our more vociferous urban experts that their shouts of warning apparently do not convince either Mr. or Mrs. Average Citizen or their elected officials.

The book is the last of the volumes studying the New York metropolitan region. The survey was conducted by the Harvard Graduate School of Public Administration for the Regional Plan Association and was financed principally by the Ford Foundation and the Rockefeller Brothers Fund.

ADMINISTRATION AND GOVERNMENT

GENERAL—Tips Worth Tapping, a collection of more than 100 suggestions for improving personnel practices. Public Personnel Association, 1313 East 60th St., Chicago 37, Ill. 1961. 60pp. $3.

CUYAHOGA COUNTY, OHIO—1961 Local Government Yearbook of the Cities and Villages in Cuyahoga County, Ohio. Part II. Cleveland Bureau of Governmental Research, 1307 Ten-Ten Euclid Building, Cleveland 15, Ohio. 1961. 63pp. $2.

MORRISVILLE, PA.—A Position Classification and Pay Plan for Morrisville Borough Employees. Bucks County Branch, Pennsylvania Economy League (Eastern Division), 435 Radcliffe St., Bristol, Pa. 1961. 89pp. $2.

PARK HILLS, CALIF.—How Park Hills Moved the County Line: A Self-Study in Citizen Action by Charles P. Weikel. Bureau of Public Administration, University of California, Berkeley, Calif. 1961. 51pp. $2.00.

FINANCE AND TAXATION

COLORADO — Wages, Salaries and Fringe Benefits in Colorado Cities and Towns. 1961 Supplement to 1960 Bulletin. Colorado Municipal League, 2300 Broadway, Boulder, Colo. 1961. 19pp. $2.

VIRGINIA—Tax Rates in Virginia Cities, by William M. Griffin. Virginia Municipal League, 905 Travelers Building, Richmond 19, Va. 1961. 24pp.

AIR POLLUTION

GENERAL—Register of Air Pollutio. Analysis, Volume 2. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 1961. 247pp. $1.25.

CEMETERIES

VIRGINIA—Operation of Cemeteries in Virginia Cities and Towns. Virginia Municipal League, 905 Travelers Building, Richmond 19, Va. 1961. 11pp. $1.

NOTEWORTHY ANNUAL REPORTS

ATLANTA, GA.—Department of Water Works Annual Report. Department of Water Works, City Hall, Atlanta 3, Ga. 1961. 18pp.

PLANNING, ZONING, HOUSING

GENERAL—Housing Design: A Social Theory, by Elizabeth Wood. Citizens' Housing and Planning Council of New York, Inc., 20 West 40th St., New York 18, N. Y. 1961. 31pp. $1.

GENERAL—A Study of Shopping Centers, by Richard Grant Thompson. Real Estate Research Program, Institute of Business and Economic Research, University of California, Berkeley, Calif. 1961. 106pp. $1.50.

GENERAL—Trends Toward Open Occupancy in Low-Rent Housing Programs of the Public Housing Administration as of March 31, 1961. Housing and Home Finance Agency, 1626 K St., N.W., Washington, D. C. 1961. 73pp.

COVINA, CALIF.—City of Covina Building Permit Manual. Building Dept., 125 E. College St., Covina, Calif. 1961. 20pp.

DAYTON, OHIO—Downtown Dayton Redevelopment Plan. City Plan Board, City Hall, Dayton, Ohio. 1961. 14pp.

DOVER, DEL.—New Directions for Dover. Raymond & May Associates, 42 Memorial Plaza, Pleasantville, N. Y. 1961. $1.

NEW JERSEY—Develop the Meadows. State of New Jersey Department of Conservation and Economic Development, Office of the Commissioner, Trenton 25, N. J. 1961. 17pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES
from September 12th to October 2nd, 1961

Date in Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
9/12/61	Tacoma, Wash.	4,000	Sewer, revenue	9	4.00	3.74
9/14/61	Fresno, Calif.	2,500	Sewer	7	4.75	3.53
9/14/61	Lockport, N. Y.	1,750	Water	16½	3.75	....
9/19/61	Dearborn, Mich.	1,000	Sewer	9	5.00	3.67
9/19/61	Fridley, Minn.	1,190	Improvement	4	4.00	4.28
9/19/61	Jamestown, N. Y	1,250	Parking, Public Impvmt.	....	3.25	....
9/19/61	Milwaukee, Wis.	7,250	Corporate Purpose, Public Improvement	8	2.70	2.90
9/19/61	New Brunswick, N. J.	1,610	Parking, Water, Sewer	10½	3.40	....
9/21/61	Norwalk, Conn.	3,080	Capital Improvement	10½	3.25	3.20
9/21/61	Topeka, Kan.	2,517	Sewer, Street, Flood Control, Park	....	....	2.66
9/25/61	Fort Myers, Fla.	1,000	City Improvement	9	3.00	3.67
9/25/61	Sacramento, Calif.	8,000	Water, revenue	....	....	3.69
9/26/61	Independence, Mo.	5,000	Electric Works	4	5.00	3.59
9/26/61	Lancaster, Ohio	1,100	Waterworks Improvement	8¼	3.25	....
9/26/61	Pasadena, Calif.	9,000	Electric Works, revenue	9	3.00	3.23
10/ 2/61	Birmingham, Mich.	1,500	Funding	2	5.00	3.37
10/ 2/61	Kenosha, Wis.	4,690	Corporate Purpose	10	3.40	3.33
10/ 2/61	Mesquite, Texas	1,250	Waterworks, Sewer	8	5.00	4.06

Compiled from THE WEEKLY BOND BUYER

FREE SAMPLE
HI-VIZ®
FLUORESCENT
Safety Paint!

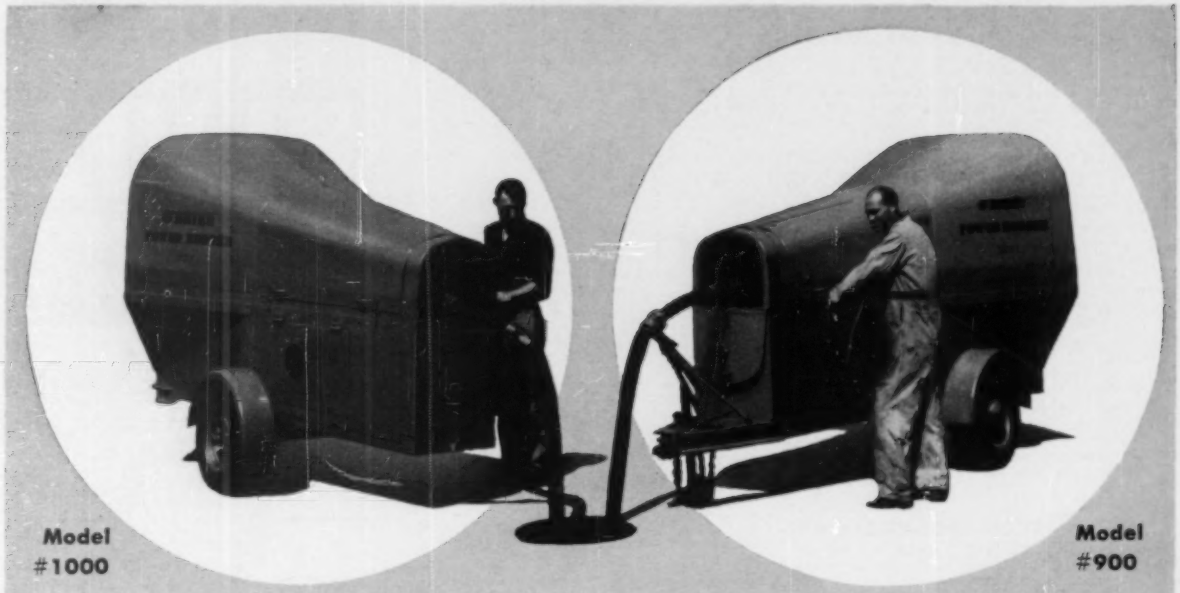
Protect lives, prevent accidents with HI-VIZ Fluorescent Safety Paint

These are the same *high visibility* colors you see *farther* and *faster* on safety-marked civilian and military aircraft. Now formulated in easy-to-apply enamel and acrylic paint for brushing, spraying and roll-on . . . and in convenient aerosol spray cans. HI-VIZ Fluorescent Safety colors are being used on wood, metal, paper, glass, plastics, cloth—over almost any type of *clean, white* surface. Colors will glow indefinitely indoors and up to 2 years out-of-doors, when applied as directed.

Write today for your new HI-VIZ Municipal Safety Color Kit. Receive a FREE sample of HI-VIZ Fluorescent Safety Paint for your own test, complete technical data, *municipal case histories*, and the HI-VIZ "101 Uses" folder illustrated in fluorescent color. Important: Write on municipal letterhead or attach it to this advertisement to qualify for FREE SAMPLE.

Lawter Chemicals, Inc.

Dept. AC, 3550 Touhy Avenue
Chicago 45, Illinois



CONTINUOUS ROD

SECTIONAL ROD

For Sewer Cleaning and Threading . . .

. . . which do you prefer?

O'Brien has both!

Whatever the reasons . . . personal preference or custom job requirement, O'Brien offers a choice of either continuous rod or sectional rods. Select a powerful "man-sized" unit that features the greaest advancement in compact design and engineering ever offered!

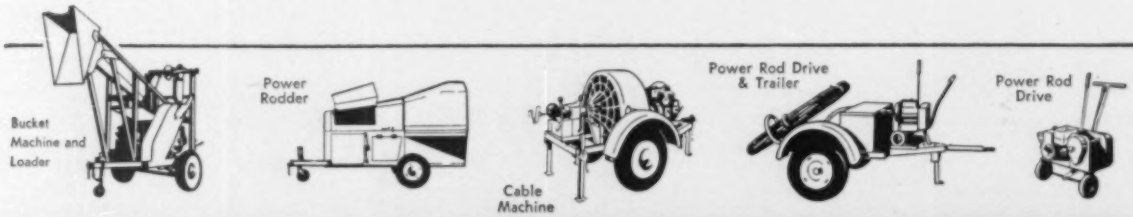
Uncontested champions for economy and efficiency

Dynamic, positive drive and pull back power, automatic safety throwout control, fully enclosed body, uses 5/16" or 3/8" rod, simple one man operation, footage meter, 9 or 12hp. engine with 12 volt starter, generator and battery . . . plus other outstanding O'Brien features. Units available in truck mounted design for fast, easy mobility.

It's wise to get the best!

The savings in better performance and greater efficiency is worth the few dollars more to get the very best there is —O'Brien! The complete line of O'Brien powerized sewer cleaning equipment reflects years of actual experience in sewer maintenance. Here, truly is time-tested equipment, designed to custom-fit any job requirement.

Get a FREE demonstration to see—how and why —O'Brien is the "cadillac" in sewer cleaning equipment.



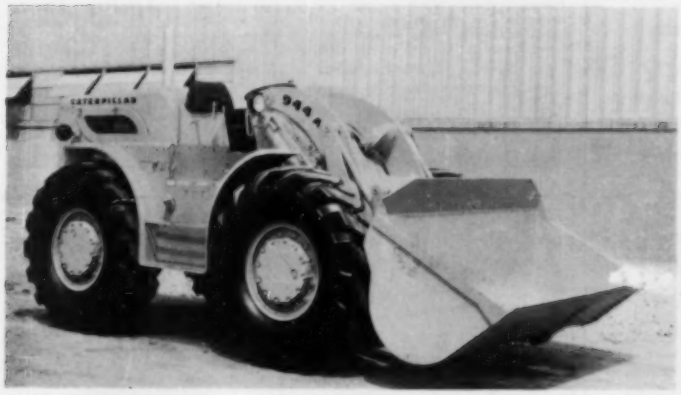
O'Brien MANUFACTURING CORP.

5634 NORTHWEST HIGHWAY • CHICAGO 46, ILL.
ROdney 3-7433

Versatile Municipal Work Package

SCHRAMM, INC., 900 E. VIRGINIA AVE., WEST CHESTER, PA., has introduced a new compressor/tractor unit that's basically a self-propelled air compressor capable of mounting a variety of accessories—rotary sweeper, rock drill, tampers, angle dozer blade, snow plow, aerial tower, etc. It permits selection of 42, 84 or 125 cfm capacity as required, making it possible to operate pneumatic tools at the same time an accessory is being used.

The new Series 62 Heavy Pneumatractor is shown at right in assembly with a 12F backhoe that excavates to 12⅔-foot depth and new, long, high-reaching 4M loader.



New Buckets Match Capacities to Materials

Nine new general application buckets introduced for Cat wheel-type loaders (3 for each of 3 models) are typed as reduced capacity bucket, narrow width bucket and standard width, increased capacity bucket. At left, a Cat 944 is shown equipped with a 2⅜-cubic-yard capacity standard width increased capacity bucket, designed to handle lighter-than-average material, but in applications calling for a standard width bucket.

For complete information, write CATERPILLAR TRACTOR CO., PEORIA, ILL.

Mobile Snow Melting System

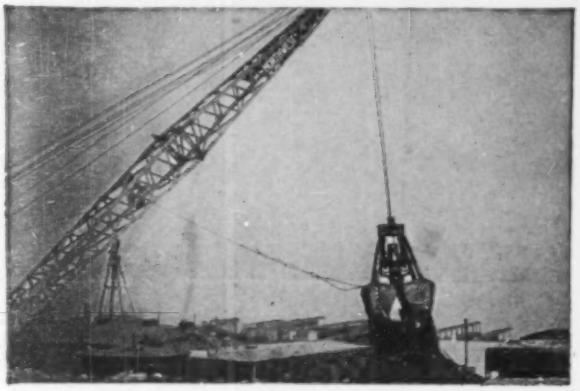
Any municipality that has suffered the costly and time-consuming practice of hauling snow to rivers and other disposal sites should be interested in a snow melting system that can melt in one hour an amount of snow equal to 15 truck loads and sells for approximately $12,000.

The unit consists of a melter and auxiliary equipment mounted on a trailer drawn by jeep or comparably sized vehicle. Key part is a tank containing highly agitated water heated to 40-45°F. Snow dumped into the tank by front-end loaders, snow blowers, or conveyors is melted by a "submerged combustion" device almost immediately. Water drains into the sewer system at the rate of about 100 gallons a minute.

(Continued on page 207)

No spot for a breakdown!

KEEP IT GOING AT ITS BEST...USE ONLY GENUINE HAYWARD REPAIR PARTS!



Hayward Buckets are designed with the most efficient construction features known. And only with *genuine* Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise costs and disrupt schedules.

Anticipate any possible breakdown.

Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY
50 CHURCH ST., DEP'T A, NEW YORK 7, N. Y.

Builders of Better Buckets Since 1888

Spherical

SHOCK TRAP® for WATER LINES

Eliminate water hammer and pipeline bursting. Save piping and plant costs with guaranteed surge limits.

PATENTS PENDING

PULSCO®

Designed primarily for shut-down or shut-off application, this unit is used in pumping plants, irrigation systems, fire control on rocket test stands, municipal water systems, etc. Of the water interface type, the Pulsco swirl principle reduces pressures and reduces shock and surge resulting from kinetic energy within the pipeline, this by compressing gas within the chamber and by friction through the swirl chamber.

Guaranteed not to recycle, this Pulsco Spherical Shock Trap is built for pressures to 200 PSIG and up. Sizes from 34 to 102 inches diam.

PULSCO *Venturi* SHOCK TRAP

For AIRCRAFT and MARINE LOADING SYSTEMS, JET FUEL and GASOLINE

Pulsation Controls Corp. was formed with the philosophy in mind of designing engineering specialty items for the elimination of shock and water hammer, the control of pulsations in liquid and gas lines and the abatement of noise caused by vent valves, blowers and other devices.

Pulsco SHOCK TRAP designs are programmed on a digital computer to accurately fit each application to the specific conditions. This new dimension adds accuracy, speed in sizing and prompt service to our customers.

Send for bulletins, application data sheets and teletype computer load sheets.

Representatives in all principal cities

PULSATION CONTROLS CORPORATION
JAckson 5-6641 P.O. Box 169 • SANTA PAULA, CALIF.

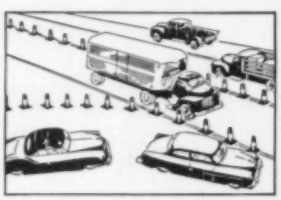
HERE is the answer to EMERGENCY BARRICADES

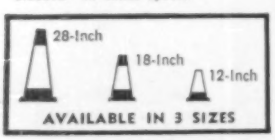
Lightweight, Easily-Adaptable

SAFE-T-CONE TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.





AVAILABLE IN 3 SIZES

Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

*Poly-Vinyl Chloride

For full information write
RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

SNOW PLOWS

V-PLOWS—from 8′ to 9½′ swath —nose heights 30″ to 54″.
WINGS—10′ to 12′—partial or complete hydraulic control.

STRAIGHT PLOWS—reversible —9′ to 12′ lengths — heights from 29″ to 60″.

TAPER PLOWS—9′ to 12′ length of cutting edge—full range of heights and adjustable or one-way.

RIGHT-V-LEFT—hydraulic control in cab converts right-hand taper to "V" and to left taper while truck is in motion.

PLUS CUSTOM DESIGNS AND SIZES TO MEET EVERY POSSIBLE REQUIREMENT

THE **GLEDHILL** ROAD MACHINERY CO.
builders of the plow with the perfect moldboard GALION, OHIO

(Continued from page 205)

Depending upon the ambient temperature, water may be discharged directly into sewers through a hose, or flushed along gutters to help remove snow from under parked cars.

The mobile model illustrated has a rated snow-melting capacity of 25 tons per hour. It's about 15 feet long and 8 feet wide. The top of the tank into which snow is loaded is 7½ feet high. A 40-gph high heat release oil burner is mounted in the center of the unit. Oil is piped to the burner, along with air from a blower. Hot combustion gases result, shooting into the tank and heating and agitating the water. Almost 98% of the oil's gross heating power is utilized and accounts for low operating costs.

Less than two gallons of fuel oil, costing around 30 cents, are needed to melt one ton of snow with this model. Consumption of gasoline to blower and other accessories is reported to be three gallons per hour.

Developed, built and marketed by THERMAL RESEARCH AND ENGINEERING CORP., CONSHOHOCKEN, PA., this unit is one in a line of mobile melters capable of handling up to 75 tons of snow per hour. It stems from a stationary model originally developed by Thermal Research for use in airports, parking lots, service stations and shopping centers. One such stationary model, rated at 25 tons per hour, was operated on a test basis at LaGuardia Marine Air Terminal in New York. Tests showed its performance equivalent to clearing 110 tons of snow from 110,000 square foot area in a little more than four hours. Fuel cost was $7.50 an hour, and was said to represent a savings of $50 per hour. Completion of the job was in at least half the time trucking would have required.

For complete information on Thermal snow melting systems and equipment, write directly to the company.

Load Snow, Windrowed, Stockpiled Materials

Two general purpose loaders that handle numerous municipal material handling jobs the year 'round are now available from Athey Products Corp., Chicago 38, Ill.

The 7-11 Force Feed loader is a low-cost, high-speed unit designed primarily for loading windrowed materials, but also handles stockpiled materials with speed and efficiency. Its rated capacity is 10 cubic yards per minute of free flowing materials and 20 cubic yards of snow per minute. The 7-11 permits loading directly to the rear of a truck—over the cab. It's also available with right or left side discharge conveyor. The feeding conveyor automatically adjusts to volume and type of material.

Travel speeds are up to 20 mph; loading speeds, down to 0.26 mph. The 7-11 has eight forward speeds, two reverse speeds, and powerful crowd action.

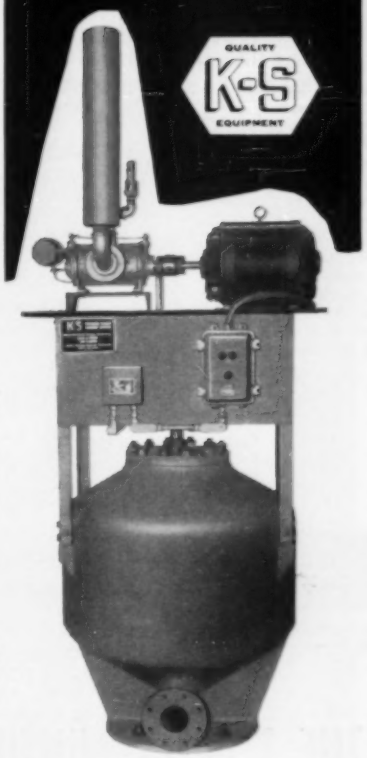
The Athey 125 HiLoader loads earth, sand, gravel, crushed rock, broken blacktop at up to 10 cubic yards per minute—25 cubic yards in snow. It's designed to put loading on a continuous assembly-line basis. A Full-Floating Feeder keeps the belt full, swiveling conveyor reduces spotting time, permits the operator to swing from one truck to another quickly.

When equipped with 18-foot conveyor the 125 HiLoader swings 55° to either side by hydraulic power controlled from the operator's platform. Discharge height is from 12 feet 1 inch to 15 feet 7 inches. The 13-foot conveyor swings 45° to either side, with discharge height ranging from 10 feet to 12 feet 10 inches.

Both the 7-11 and 125 HiLoader force-feed units are designed to load more material in less time and at less cost. For complete information, write to ATHEY PRODUCTS CORP., 5631 W. 65TH ST., CHICAGO 38, ILL.

An Athey loader loads snow from windrow, scrapes down to bare pavement, cleans close to curbs.

PNEUMATIC SEWAGE EJECTORS



- Komline-Sanderson sewage ejector systems — from 30 to 600 GPM capacities, simplex or duplex arrangements.
- Available with K-S transistorized, electronic liquid level or mechanical (float) controls.
- Furnished with air compressors or for operation on plant air supplies.
- Backed by the Komline-Sanderson service policy.

Write for Bulletin No. KSM-2

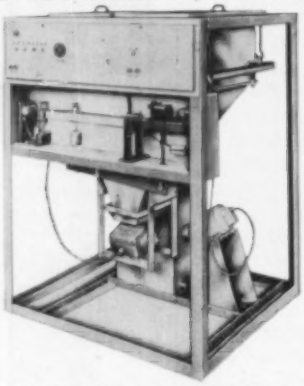
KOMLINE-SANDERSON
ENGINEERING CORPORATION
PEAPACK, NEW JERSEY
BRAMPTON, ONTARIO, CANADA

FOR ACCURATE FEEDING OF DRY CHEMICALS

SYNTRON DIMINISHING BATCH

WEIGH FEEDER MACHINES

Designed for the accurate feeding of chemicals required in water filtration and sewage treatment plants. Syntron Diminishing Batch Weigh Feeder Machines provide a reliable continuous feed of materials in pounds per hour at any desired predetermined rate from 3 lbs to 300 lbs. per hour.



Write for a Syntron Catalog today

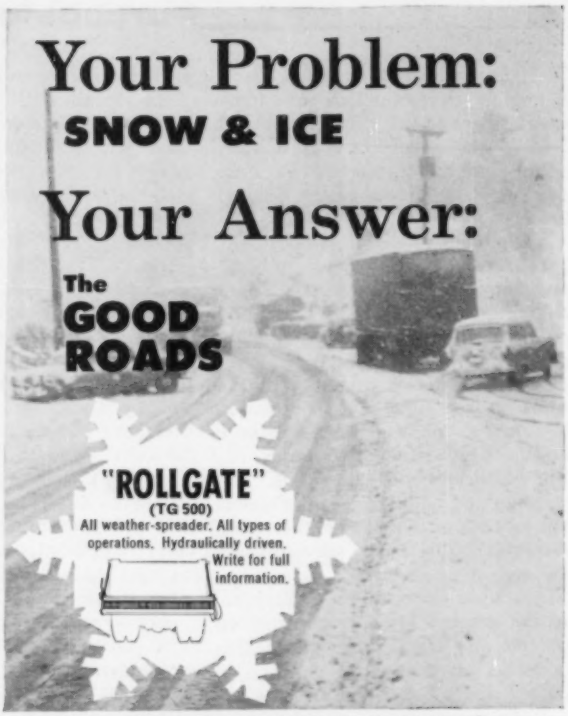
If your city is facing such a problem or has an application requiring accurate, continuous weigh feeding, consult your Syntron representative for information and quotations.

61WF1

SYNTRON COMPANY
430 Lexington Avenue • Homer City, Pa.

Your Problem:
SNOW & ICE

Your Answer:
The GOOD ROADS



"ROLLGATE"
(TG 500)
All weather-spreader. All types of operations. Hydraulically driven. Write for full information.

Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

Good Roads GOOD ROADS MACHINERY CORPORATION
MINERVA, OHIO

THE J. M. CLEMINSHAW CO.

— APPRAISERS —

Founded 1923

1601 Brookpark Road Cleveland 9, Ohio

SPECIALIZING IN THE REVALUATION OF MUNICIPALITIES AND RURAL PROPERTY FOR LOCAL TAX EQUALIZATION PURPOSES

Brochure & Client List Sent on Request

— BRANCH OFFICES —

Plainville, Conn., 11 Williams Street
Milwaukee, Wis., 2014 Sunset Court
Union, New Jersey, 2165 Morris Avenue
West Des Moines, Iowa, 712 28th Street

New! on MICHIGAN AVE. at 12th St. in Chicago

Modern Luxury in Downtown Chicago

Free Covered Parking for all guests

CHICAGO'S SMART DOWNTOWN MOTEL — RIGHT ON MICHIGAN AVENUE ACROSS FROM GRANT PARK. Closest to all convention centers — museums — theatres and shopping. Register from your car. Every room excitingly furnished — tile bath with tub and shower, free TV, AM & FM, Hi-Fi radio, room controlled heating and air-conditioning. Self dialing phones — 24 hour switchboard and message service. Free ice cubes. Room service. Atmospheric restaurant and lounge. Sun deck. Private dining rooms. Free swimming privileges at Acres Cabana Club. Phone HA 7-8200. TWX CG-82

Members: AAA Best Western Motels Reservations— Quality Courts.

Closest to all Chicago convention centers. Suites and sample display rooms. Private meeting and banquet rooms.

All major credit cards accepted.
Write for rates, free maps and folders.

Avenue MOTEL
Michigan Ave. at 12th St., Chicago, Ill.

Improved Snowthrower Attachment

Development of a more efficient snow thrower attachment for the Jari Champion self-propelled tractor has been announced by Jari Products, Inc.

The improved unit is designed for heavy-duty snow removal around institutions, public buildings, municipal plants. A new fan housing of heavy-gauge welded steel has a 20-inch scoop that takes in all types of snow up to 24 inches deep. Steel wheels on each side of the scoop adjust to facilitate operation on any type of surface, reports the manufacturer.

Jari's new snowplow extensions, which operate effectively in snow up to 6 inches deep, also fit the Champion to enable it to clear a 36-inch swath. The Champion is designed to throw snow up to 30 feet. It is powered by a 3-hp Briggs & Stratton ball bearing engine. Positive traction is assured by 16-inch cleated rubber wheels. An independent clutch governs operation of the snow thrower; adjustable handlebars and fingertip controls considerably increase operation convenience.

For additional information, write JARI PRODUCTS, INC., 2980 PILLSBURY, MINNEAPOLIS 8, MINN.

Erecting Image Telescopes

Engineers and surveyors who prefer working with upright images in transits, will be interested to learn that this feature is now available on a number of Wild Herrbrugg instruments.

Both the Wild T-1A optical repeating transit and the T-16 optical transit are offered with erecting image telescopes. To differentiate these from the internationally standard inverted image instruments, they've been designated as T-1AE and T-16E.

The Wild T-2 universal theodolite also includes the erecting image telescope in the T-2E Model. The N-10 Level with the upright erecting image feature is soon to be announced.

The "E" Models, like their standard counterparts, are finished in the well-known Wild green color, which is known for its low light-reflection and high heat-reflection qualities. Further information on these instruments can be obtained by writing to WILD HEERBRUGG INSTRUMENTS, INC., MAIN AND COVERT STS., PORT WASHINGTON, N. Y.

New Ladder-Type Trencher

Model 255 cuts an 18-inch to 48-inch trench up to 15 feet deep, yet despite this big digging capacity, it has a low silhouette, 9-foot, 2-inch height and 7-foot, 10-inch width outside crawlers. This results in a low center of gravity, better close-quarter trenching capabilities, and truck transportability without disassembly and without special permits.

Hydraulic actuation of steering and bucket line clutches permits quick response to depth variations and to hold close grade tolerances. Positive down crowd through hydraulic power and control assures fast set-ins, finger tip control for the operator.

The 255 has digging feeds available with optional sprocket, from 3.9 to 140.2 inches per minute and three conveyor belt speeds—277, 379 and 661 feet per minute. Tractor-type crawlers have 16-inch wide shoes. The machine has spring

(Continued on page 210)

CASTINGS?

That's all we make!

And on hand for immediate delivery are thousands of standard designs such as –

What's more, we have

15,000

patterns from which construction castings can be produced fast.

Our 168 page catalog of Gray and Ductile Iron castings will be sent promptly upon request.

NF

NEENAH FOUNDRY COMPANY
NEENAH • WISCONSIN

Chicago office: 5445 N. Neva Ave., Chicago 31

The Man from Hobbs says:
YOU'LL HAUL 3 YARDS MORE REFUSE IN A HOBBS HYD-PAK!*
HOBBS HYD-PAK
A DIVISION OF HOBBS TRAILERS
O-G-5
*. . . than in other refuse packers of comparable weight and cost!

The BIG DIFFERENCE is in the capacity ratings. With a "16-yard" Hyd-Pak, you get 16 yards in the main storage compartment, where refuse can be completely compressed. The three-yard loading hopper is not even counted (though it can be filled and used to transport refuse at the end of a run). Before you buy refuse collection bodies, you should see this true capacity in action. We'll be happy to arrange a demonstration. Just write or wire:

HOBBS HYD-PAK • 609 North Main • Fort Worth • Cable HOBBSCO

Purchasing

(Continued from page 209)

cushioned, cutting blade action bucket cleaner.

For complete information and specifications, write to the PARSONS Co., P. O. Box 431, NEWTON, IOWA.

Flasher, Warning Light Lens

Stimsonite Division of the Elastic Stop Nut Corporation of America has introduced a plastic lens for barricade use that conserves battery power yet projects maximum illumination on flashing barricades and

other warning devices. It is called "Hazard" and uses a new optic system, designed to eliminate common thin "propeller" effects and "firefly" appearance, as well as loss of signal due to mis-aim.

For added signal intensity, improved detection and maintenance of signal in the event of bulb or battery failure, an area of reflex reflector in the form of a ring is incorporated around the outside of the lens on one of the models. The Hazard lens fits all standard 7-inch barricade units. For specifications and detailed engineering studies, write to STIMSONITE DIVISION, 3445 N. KIMBALL AVE., CHICAGO 18, ILL.

Surface Preparation Sweeper

This tractor-mounted sweeper with collecting pan of 12-cubic-foot capacity has been developed to sweep ahead of equipment, such as a slurry seal machine, during the actual street paving process. It has a standard 6-foot wide broom that's 30 inches in diameter. Broom operating speed is 120 rpm.

According to the manufacturer, the broom is adjustable to compensate for wear and is spring balanced to maintain constant contact on the

ground without excessive pressure on the broom. As much as 6 inches of bristle may be worn off before broom replacement becomes necessary.

The driver controls the sweeper from the tractor seat. The broom is lowered to sweeping position, and when the pan is full it is raised, taken to dumping location where the pan is emptied without leaving

the tractor. The sweeper is completely shrouded. It eliminates the scattering of rocks and other objects, preventing damage to cars or buildings that may be adjacent to the work area.

For additional information on this debris-collecting sweeper, write to The Young Co., 200 Mill St., Waco, Texas.

Improved Outdoor Lighting Control

The new "Omega" multiple lighting photocontrol introduced by Precision Multiple Controls, Inc. has been developed primarily for electric utility and municipal street lighting. It is available in 115- and 240-watt models, with a 2¾-inch ID base to fit EEI-NEMA standard locking type receptacles. Rated at 1800 watts for incandescent lamps, it's rated 1800-volt amperes on mercury vapor installations.

Safety features incorporated in the new Omega control are aimed at overcoming four specific on-line performance problems most frequently reported by utilities: low- and high-voltage lightning surge; precipitation decay in photocells; atmospheric corrosion of integrating relay switches, and vandalism and breakage due to field storage and handling.

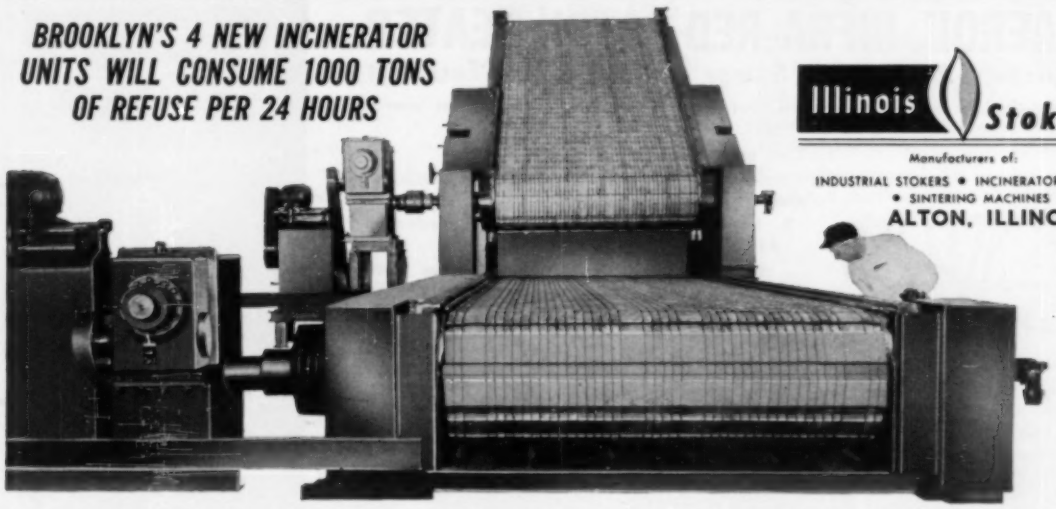
Technical Bulletin 770 carefully illustrates and describes the "Omega." For a copy, write to Precision Multiple Controls, Inc., 233 Chestnut St., Ridgewood, N. J.

Multiple-Speed Transmission for Heavy-Duty Vehicle

An unsynchronized version of Spicer's 12-speed transmission is now available to operators of heavy-duty vehicles. It is designated Model 8125-U and except for elimination of the hand shift synchronizers, re-

(Continued on page 212)

BROOKLYN'S 4 NEW INCINERATOR UNITS WILL CONSUME 1000 TONS OF REFUSE PER 24 HOURS



Illinois Stoker

Manufacturers of:
INDUSTRIAL STOKERS • INCINERATOR STOKERS
• SINTERING MACHINES
ALTON, ILLINOIS

This giant bar/key stoker is one of four, custom-designed, for Brooklyn's new Hamilton Avenue Incinerator Plant. The drying stoker measures 8' wide x 22' long; burning stoker, 8' wide x 35' 3" long.

Original overlapping key design prevents jamming and possible damage — reduces sifting of material through grate. Automatic Feed and Continuous Discharge save time and labor.

Illinois Incinerator Stokers built to your Specifications

Supervised Assembly at your Plant

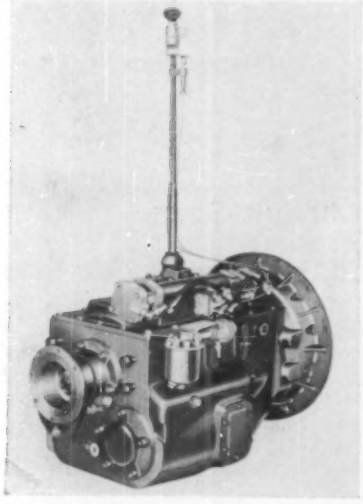
Bar/Key or Chain Grate Models. Sizes to 24 feet wide. Cast iron or cast steel links or keys.

Write Today for Complete Information.

(Continued from page 211)

tains all design and operating features of the fully synchronized 12-speed box.

To provide space for a clutch brake, the depth of the clutch housing has been increased ⅜ inch. This clutch brake facilitates shifting into first and reverse without severe gear clash by slowing down or stopping rotation of the transmission main drive gear and internal gears.



Supplemental gearing with the 8125-U is not required because it provides sufficient low gear reduction (10.45 to 1), plus progressive, non-overlapping, close steps to handle varying road and load conditions. The manufacturer reports that the average rpm spread between all gears, 1 through 12, is 455 rpm.

Additional features include 6 low range steps in reverse plus fuel economy with the .80 ratio in 12th speed overdrive. Standard 6-bolt PTO apertures are provided on both left and right side of the case. S. A. E. No. 1 or No. 2 clutch housing, as required, is available to accommodate Spicer 14 inch or 15 ½-inch two-plate clutches, or equivalent.

DANA CORPORATION, TOLEDO 1, OHIO, reports that the unsynchronized Model 8125-U is available as factory-installed original equipment. For operators who desire to convert present synchronized 12-speed units in the field, there is a conversion kit—Spicer Kit No. 311329.

New Dodge Truck

An ideal unit for municipalities, the 1962 Dodge C-800 permits heavier front axle loading. It's available in six wheelbases from 122 to 200 inches, has 204-hp, 361 cubic-inch V8 engine, and maximum gross vehicle weight rating of 28,000 pounds. The Gar-Wood packer body has a capacity of 16 cubic yards.

Luminaire for Urban and Rural Applications

The Quadro-liner is a new luminaire with open-bottom refractor composed of four individual quadrants or sections. Each section is available in five different designs. According to the manufacturer, many combinations can be made for a

AEROIL INFRA-RED PATCH HEATER

Repairs Potholes and Bumps Faster, Easier, at Less Cost

On-the-job tests have proved that Aeroil Infra-Red Patch Heater makes bump and pothole repair easier and less costly. Here's why:

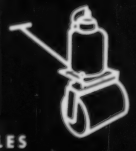
1. Cuts manpower requirements in half.
2. Saves material costs by utilizing material in place.
3. Saves time and costs formerly needed to deliver and haul away material.
4. Dries and softens potholes, thus eliminating the cost and time involved in painting with emulsion.
5. Frees heavy equipment for other jobs.

Write or call Aeroil for complete information on the Aeroil Infra-Red Patch Heater.

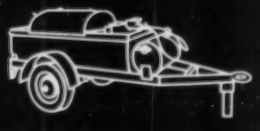
Model HE-PR-32 Infra-Red Asphalt Heater

BITUMINOUS DISTRIBUTORS

PATCHING EQUIPMENT

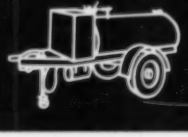


KETTLES



ASPHALT TOOLS

CUT BACK SPRAYERS



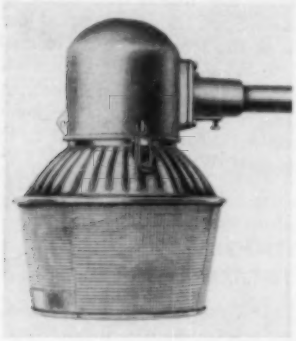
Aeroil SINCE 1911

MUNICIPAL EQUIPMENT

AEROIL PRODUCTS CO., INC.
69 WESLEY ST., SOUTH HACKENSACK, N. J.
4648 S. Western Ave. Chicago 9, Ill.
3217 Union Pacific Ave. Los Angeles 23, Calif.

lighting pattern to match almost any roadway lighting requirement. Also, "spill" light can be controlled and wasted light can be eliminated.

The luminaire can use incandescent or mercury lamps up to 250 watts. Photo-control can be bought



with the luminaire to operate the unit automatically. The open refractor enables the Quadro-liner to be cleaned and relamped without unlatching or removing the reflector assembly.

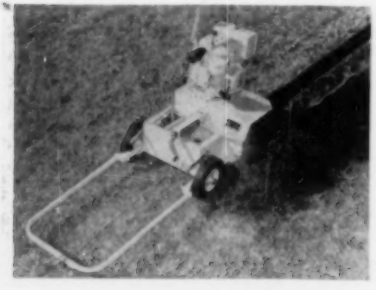
For additional information about the Quadro-liner luminaires, write to WESTINGHOUSE ELECTRIC CORP., LIGHTING DIVISION, EDGEWATER PARK, CLEVELAND, OHIO.

Compact Utility Trencher

Davis Mfg. Inc.'s new W-36 trenches from 6 inches to 3 inches wide to a maximum depth of 36 inches deep and operates at speeds up to 500 feet per hour. It has built-in torque limiter that disengages when a shock load is encountered, then re-engages immediately to continue digging. Power source is a heavy-duty 6-hp Briggs & Stratton engine.

Another feature of the W-36 is its self-transporting drive. By simply pulling a lever, a friction wheel engages the rear tire and the machine moves to a new trenching site or to its carrier at speeds up to 4.5 mph.

Since the W-36 is self-propelled



OTTAWA STRATO-TOWER

cuts costs for cities!

Strato-Tower saves costs, labor, on construction and maintenance without interrupting traffic flow for City of Minneapolis.

Ottawa Strato-Tower can do the same for you

Get your city's off-the-ground-work done faster, safer and at lower cost with the Ottawa Strato-Tower. Single lever control puts the man in the basket in complete control. Fiberglas baskets and booms (optional) isolate crews from high voltage. Have your Ottawa Distributor show you what Strato-Tower speed, safety and economy can do for you! **Equipment Division, Young Spring & Wire Corporation, Bowling Green, Ohio.**

Strato-Tower saved $3000 first year, paid for itself in 6 months for Marshfield, Wisconsin utility.

Strato-Tower cuts maintenance costs, increases safety, eliminates ladders, does job faster for City of Detroit.

EQUIPMENT DIVISION

YOUNG SPRING & WIRE CORPORATION

BOWLING GREEN, OHIO . . . Manufacturer of

DAYBROOK TRUCK EQUIPMENT **OTTAWA** CONSTRUCTION EQUIPMENT

THE ORIGINAL AND WORLD LEADER IN INSECTICIDAL FOG GENERATORS

TIFA

TODD INSECTICIDAL APPLICATOR

EXTRA VERSATILITY
EXTRA ECONOMY ON GASOLINE OR LIQUID PETROLEUM GAS

FOG OR MIST
DEADLIEST TO PESTS

True clean all-enveloping TIFA fog gets the kill wherever insects swarm. TIFA can also produce a useful fog mist or spray. Best by test for over 17 years, TIFA gives complete space control at lowest operating and maintenance cost in 7000 communities throughout the world. Peak performance with both new and older type insecticides . . . one-man operation. New Starter-Generator (optional) for immediate starts, easily attached to new and existing TIFA units. Listed by Underwriters' Laboratories, Chicago. *Write for illustrated folder and official comments.*

TODD PRODUCTS
A Division of Todd Shipyards Corporation
SALES AND ENGINEERING
Columbia and Halleck Streets, Brooklyn 31, N. Y.
MANUFACTURING: Green's Bayou, Houston 15, Tex.

Sales and Service Agencies throughout the Western Hemisphere

Statement Required by the Act of August 24, 1912, as amended by the acts of March 3, 1933, July 2, 1946 and June 11, 1960 (74 Stat. 208) showing the Ownership, Management, and Circulation of

THE AMERICAN CITY published monthly at New York, N. Y., for Oct. 1, 1961.

1. The names and addresses of the publisher, editor, managing editor and business managers are:

Publisher, Edgar M. Buttenheim, 470 Park Avenue South, New York 16, N. Y.
Editor, William S. Foster, 470 Park Avenue South, New York 16, N. Y.
Managing Editor, None
Business Manager, None

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

BUTTENHEIM PUBLISHING CORPORATION, 470 Park Avenue South, New York 16, N. Y.
Stockholders:
Curtis R. Buttenheim, Lookout Mountain, Tenn.
Edgar J. Buttenheim, 470 Park Avenue South, New York 16, N. Y.
Edgar M. Buttenheim, 470 Park Avenue South, New York 16, N. Y.
Harold S. Buttenheim, Madison, N. J.
Estate of Marian V. Buttenheim
Martha E. Buttenheim, Ashland, N. H.
Donald V. Buttenheim, 470 Park Avenue South, New York 16, N. Y.
Arthur W. Buttenheim, as Surviving Trustee, Madison, N. J.
George S. Conover, Wilmette, Ill.
Barbara B. Hicks, Warwick, N. Y.
Hattie Radnitz, 70 East 10th St., New York 3, N. Y.
Constance B. Swain, 404 North Broadway, Yonkers, N. Y.
Florence Wagner, Hollis, L. I., N. Y.

3. The known bondholders, mortgagees, and other security holders, owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder of security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue). 17,956.

Sworn to and subscribed before me
this 20th day of September, 1961
Queen's County Clerk's No. 41-1192115
(My commission expires March 30th, 1963)

EDGAR M. BUTTENHEIM
Publisher
GERTRUDE E. BAUER
Notary Public
Queens County, N. Y.

Purchasing

(Continued from page 213)

by a 6-speed winch drive and has self-locking depth control, the operator can handle other chores on the job while the rig is trenching. According to the manufacturer, the rig follows the winch line right to the stake. Spoil is all diverted to one side so the trench is easy to backfill.

The W-36 comes equipped with a complete staking kit—the main stake, a deadman stake and guy line. For complete information, write to DAVIS MFG. INC., WICHITA, KANS.

Introduces Sixth Tractor Shovel

Latest addition to the Allis-Chalmers tractor shovel line is the HD-7G, with 1¾ cubic yard capacity and full hydraulic power steering and oil-cooled power brakes, specifically designed to reduce brake adjustments and provide for self-adjusting clutches.

A 100-hp A-C turbo-charged diesel engine is the power source for this unit. Torque converter performance is combined with a new, single lever power shift transmission featuring a "Ground Speed Control" governor, which permits the operator to pre-set any working travel speed to match job conditions. With fingertip shifting on the go, HD-7G operators have an infinite range of working speeds up to 5.9 miles per hour forward and 4.2 miles per hour in reverse.

Allis-Chalmers reports that the HD-7G has the longest, widest undercarriage of any machine in its class-size. Quick-mounted front attachments include a heavy-duty rock bucket, rock fork, light materials bucket, lift forks, crane hook, straight and angling dozer blades, and pulp-wood loader. A hydraulic ripper and a backhoe are rear mounted.

For complete information, write ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WIS.

Safety Snow Plow for Trucks, Wheel Loaders

An automatic trip edge snow plow has been developed by BALDERSON INC., WAMEGO, KANS. Its spring-loaded trip-cutting edge allows the plow to "ride over" any hidden obstruction in the roadbed without damage to plow, injury to operator, or strain on the power unit. And because only the edges trip, the load is maintained and valuable time is not lost, reports the manufacturer.

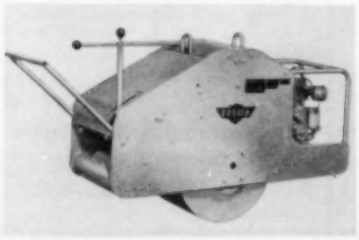
When the cutting edge strikes an obstruction, it swings back and under the blade, letting the obstacle pass under without catching on the plow. The cutting edge then springs back to original position.

The new trip-edge plows join a full line of V-type, one-way and reversible plows built by Balderson for all makes of motor graders, most makes of trucks and all Caterpillar prime movers—wheel loaders, motor graders, and wheel and track-type tractors. For additional information write to the company.

Vibrating Compactor for Close-Quarter Work

Introduced by Essick Mfg. Co., for compaction of either soil or asphalt, the Model VR-13W vibrating compactor is an ideal unit for compaction in close quarters, around foundations, trenches, ditches and in almost inaccessible backfilling operations. It is self-propelled and said to require only the guidance of the operator.

The Model VR-13W is 17¼ inches wide, 71½ inches long (overall, including handle), 36 inches high, and weighs 700 pounds. Powered by a 4.8-hp air-cooled engine, and equipped with a separate clutch to allow operation with or without the vibrating mechanism engaged, the VR-13W propels itself up to 1 mph in either forward or reverse direction. For additional information, write to ESSICK MANUFACTURING CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF.

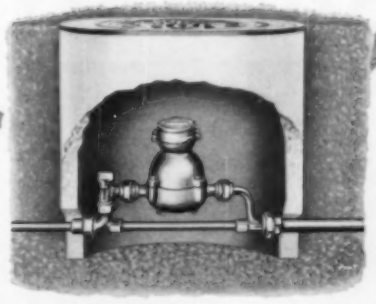


New Residual Chlorine Indicator

Wallace & Tiernan Inc. has introduced a new electro-chemical residual chlorine indicator which analyzes treated water continuously. It is designated as Series A-780. In operation residual chlorine (free or total) acts on a pair of electrodes in a sampling cell. A dc current proportional to the residual in a continuous

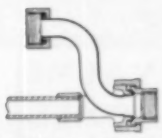
(Continued on page 216)

Save... Time - Money

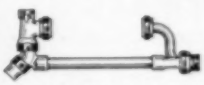


ON WATER METER INSTALLATIONS WITH THE

FORD LINESETTER



Section view of tube end assembly showing double-purpose connection for iron or copper.



Type VEA Linesetter 45° angle inlet for copper. Double Purpose Coupling Outlet.

The Ford Linesetter is as easy to install as a new pipe union in all types of shallow meter settings, with all kinds of meter boxes.

- Service line connections and settings are compact, and the valve is easy to reach.
- Costs for labor and maintenance go down.
- Ford set meters are easier to read, easier to change, stay cleaner, thus receiving better care and earning more revenue over a longer lifetime.

Send for free Ford catalog No. 62

Manufactured by
THE FORD METER BOX COMPANY, INC.
Wabash, Indiana

FOR BETTER WATER SERVICES FORD

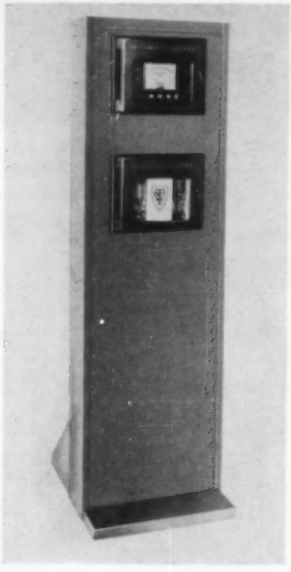
(Continued from page 215)

sample is produced. This current controls an electric indicator. The system is said to be direct, uncomplicated and accurate.

The W&T indicator may be furnished in any one of three arrangements: to indicate residuals only; to indicate residual values and control alarms; and to indicate residual values and control chlorinator output.

The complete A-780 indicator consists of a sampling-cell unit and an indicator unit in compact, moisture-proof cases. These may be furnished in a self-supporting panel or individually for wall or panel mounting. They may be operated safely in damp areas.

According to W&T this indicator registers the slightest residual change (sensitivity is 0.1 ppm) within 10 seconds after the sample waste water enters the instrument. All components are readily accessible and installation requires only bringing sample water to the unit and providing a drain for sample-water waste.



For additional information on the Series A-780 indicator for measuring chlorine residuals, write WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. J.

Forced Feed Conveyor Loader

The new forced feed conveyor loader attachment announced by MASSEY-FERGUSON INDUSTRIAL DIVISIOJ, DETROIT 32, MICH., for its industrial line of equipment is shown here mounted on the M-FF65 utility tractor. It is 30 inches wide, equipped with heavy ply rubber belting, and attains a speed of 500 feet per minute. Engine speed is 1,500 rpm. Capacity is five to eight

CARRY BARREL

PERFECT SIZE 55 Gallons
PERFECT SHAPE 24" Dia. x 28" H
PERFECT WEIGHT 7 Pounds

Designed and molded exclusively for refuse collection, the Carry Barrel is exactly right for the job.

New double thick bottom and rigid leather-tough sides give months and months of use.

New Low Quantity Prices

TO ORDER
Phone Us From Anywhere
CAstle 1-0123 - Collect

COUNTY PLASTICS CORP.
1235 NEWBRIDGE ROAD
BELLMORE, N. Y.

TWO PIECE

5¼" two-piece sliding or screw type cast iron valve boxes, covering 4" through 10" valves.

ADJUSTABLE VALVE BOXES

THREE PIECE

5¼" three-piece valve boxes supplied with bases for 4" through 24" valves. Interchangeable parts.

Manufactured to the highest standards for sure service.

A complete line of service and roadway boxes, manhole rings and covers. (Covers marked gas or water)

OPELIKA FOUNDRY CO.
OPELIKA, ALABAMA

P. O. Box 326 • Phone SHerwood 5-7672

Atlantic City's Newest Convention Hotel

The Jefferson with its new facilities for handling all convention groups is fast becoming Atlantic City's most popular convention hotel.

The Jefferson features an abundance of Meeting, Banquet and Exhibition Rooms fully equipped to handle your every need. Experienced personnel. Location ideal in heart of Atlantic City.

WRITE • PHONE • WIRE TODAY
FOR DESCRIPTIVE LITERATURE

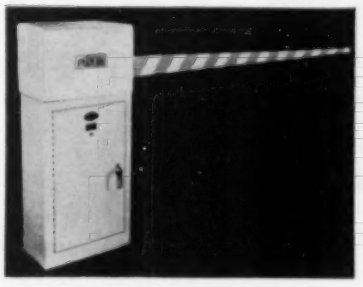
Convention Manager
Hotel Jefferson
Atlantic City, N. J.

cubic yards a minute in loose material and 20 cubic yards per minute in snow. Dimensions include over-all length of 25 feet; width, seven feet, operating height, 11 feet; transporting height, 8 feet; discharging height, 10 feet. High carbon steel feeder blades are 33 inches long and 6 inches high.

The over-all rig has two steering wheels. One is used when operating in the "reverse" or loading position; the other, for operating forward when the unit is being transported

from job to job. The elevating loader is designed for such material handling jobs as stockpile loading, windrow pickup, scarifying and stripping.

Automatic Parking System



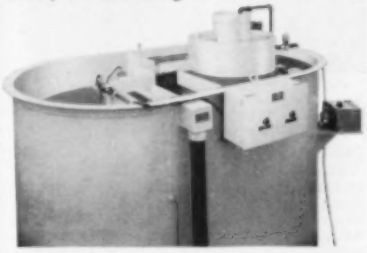
Parcoa Division of Johnson Fare Box Co. announces a redesigned gate-controlled parking system for municipal parking lots. Called "Low-Boy," it has a lower, longer gate arm that prevents low-slung cars from entering free by going under the gate.

A new feature is the Toll-Road control, which opens the gate when a motorist throws the proper amount of money into the coin hopper. An-

(Continued on page 218)

ROTOFLOW
WATER PURIFICATION PLANT

. . . will solve your water problem, whether it be sterilization, color, turbidity, iron, manganese, taste and odor, or softening



ROTOFLOW packaged water purification units are available to handle flows from 300 to 6,000 gallons per hour.

These open construction, gravity flow plants are:

- Factory assembled, self contained units
- Fully automatic, yet easy to maintain
- Ready for power and water hook up, can be trucked to the site.

For complete details write to:

NORTHWEST FILTER CO.
528 S. Holden Seattle 8, Wash.

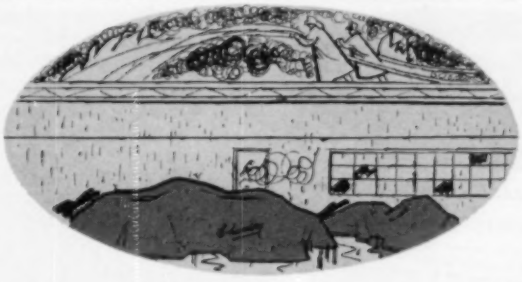
DON'T DIG THROUGH BURIED PIPELINES!

find them fast with
DETECTRON "505"

This portable precision instrument makes short work of determining exact location and depth of buried pipes, cables, manhole covers. Not a radical experimental design, but proven by years of use in municipalities and industry. Full effectiveness in all temperature ranges.

Housed in rugged aluminum case, Detectron "505" features shielded loops and locked-in tuning for pinpoint accuracy; unit construction for simple maintenance. WRITE TODAY FOR DATA AND LOW PRICES.

DETECTRON
DIVISION OF TINKER AND RASOR
Dept. A-11 • P.O. Box 243 • San Gabriel, Calif.



Build extra good will on fire calls!

MINIMIZE SMOKE AND WATER DAMAGE with FULTON SHUREDRY GREEN-BAK SALVAGE COVERS!

You'll create a better public image of your fire department when you use Fulton Salvage Covers. Because these quality covers give property maximum protection from smoke and water damage, they signify an extra measure of care on the part of your firemen. This results in greater good will, support for your department and in valuable community relations.

Features of Fulton Salvage Covers: FINEST QUALITY TREATED DUCK • LIGHT, PLIABLE AND MILDEW RESISTANT • PRESSURE IMPREGNATED BY FULTON'S EXCLUSIVE "DRY-TREATMENT" • WATERPROOFED SEAMS • EASY TO HANDLE IN ANY TEMPERATURE

Fulton Salvage Covers meet the specifications of the National Board of Fire Underwriters, and are approved by Associated Factory Mutual Fire Insurance Companies.

Contact your fire equipment dealer or a division of Fulton Industries, Inc.

Fulton COTTON MILLS

FULTON MANUFACTURES A COMPLETE LINE OF NYLON SALVAGE COVERS

P. O. BOX 1726 • ATLANTA 1, GEORGIA • TELEPHONE 688-1111 • TWX: AT 24

Clean Water Meters now in FIVE Minutes —

with VAPOR BLAST
Liquid Honing

...no acids, solvents, scrapers, wire brushes

Meters and parts at Milwaukee Water Works before and after Liquid Honing.

Modernize *your* meter cleaning — with Vapor Blast LIQUID HONING! Removes dirt, discoloration, scale, paint from corners, crevices, internal parts, chambers, thoroughly and effectively, with *no possibility* of scratching, scoring, or change in precision tolerances. Completely cleans a meter and all parts in less than FIVE minutes . . . Delivers cleaner, brighter water meters that look like new — to build customer satisfaction and confidence in your water meter department *economical* replacement program.

VB Liquid Honing is proving itself in Milwaukee, Cincinnati, and in towns in New Jersey, Georgia, Florida. Get the whole time-saving, money-saving story on VB LIQUID HONING in meter cleaning — or send a meter for Free laboratory demonstration cleaning.

*Vapor Blast and Liquid Honing are Trademarks
Representatives—Good Territories Available.

VAPOR V-B BLAST

VAPOR BLAST MFG. CO.
3037 W. Atkinson Ave., Milwaukee 9, Wisconsin

APCO SUPER-DeLAVAUD CAST IRON PIPE WITH ALTITE® JOINTS

meets ALL 10 requirements for underground mains

- Service for centuries
- Bottle-tight joints
- Easy tapping and cutting
- High record of maintained flow efficiency
- Strength against crushing
- Strength against impact
- Beam strength
- Strength against internal pressure
- Impervious pipe walls
- Low installation costs

NO cheap substitute pipe can meet these "musts"

ALABAMA PIPE CO.
A DIVISION OF WOODWARD IRON COMPANY
Phone AD 6-7601, ANNISTON, ALABAMA

We invite your inquiry at any sales office:

CHICAGO: 122 S. Michigan Avenue
NEW YORK: 350 Fifth Avenue
KANSAS CITY: Suite 950, 1006 Grand Ave.
DETROIT: 18505 W. Eight Mile Road
SOUTH GATE, Calif: 5335 Southern Ave.

Purchasing

(Continued from page 217)

other innovation is an automatic capacity counter, which lights a flashing "Lot Full" sign when a preset number of cars has entered the lot. A new instant-reversing gate control speeds traffic flow during rush hours. It interrupts the closing cycle and reopens the gate so cars needn't wait until it closes completely before opening again.

Low-Boy gates may be operated by coins (5c to $1.35), tokens, coded card-keys, and ticket dispensing controls. Any combination of controls is available: coin and/or card-key entrance with free exit; free entrance with coin, token and/or card-key exit; free, ticket-dispensing entrance with token and coin-paid exit, etc. For more information on the Low-Boy automatic parking system best suited to your specific needs, write to PARCOA DEPT. AMC, JOHNSON FARE BOX CO., 4619 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

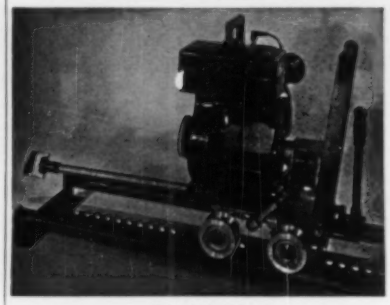
Light Hauling Vehicle

TORO MFG. CO., MILWAUKEE, WIS., has introduced a utility version of its Golfmaster, which it calls the Workmaster. This all-work unit is designed to take on most hauling jobs around the golf course; off-course transport uses include light hauling at cemeteries, public parks, housing developments, etc.

The Workmaster has a heavy-duty

10-hp engine and 5-gallon fuel tank with electric indicator and outside fill. Transmission is a 3-position type: forward, reverse and neutral. Vibration-free tiller bar permits steering from either side and has a 2 to 1 gear ratio which cuts down over-steering and "tiller wobble." Top speed achieved by the Workmaster is between seven and ten miles per hour. Total capacity of the vehicle's carry box is approximately 15.4 cubic feet. Loading is made easier by remo able sideboards.

EBMI Underground Boring Machine
New! Improved!



Model 70

- **BORES**—with no surface break
- **BORES**—up to 250 feet in length
- **BORES**—up to six inches diameter
- **BORES**—so drill stem of pipe of conduit stays
- **BORES**—1,000 feet on 1 Gal. of gas
- **REAMS**—up to 12 inches diameter

Write immediately for information.

EBMI
EARTHWORM BORING MACHINE, INC.
P. O. Box 1100
Santa Monica, California

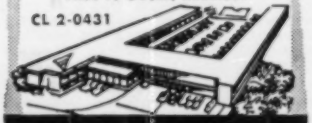
Holiday Shores MOTEL

DIRECTLY ON "WORLD FAMOUS" DAYTONA BEACH

EFFICIENCIES FROM $50.00 PER WEEK
BEDROOMS FROM $40.00 PER WEEK

LARGEST AND FINEST—
- HEATED POOL • COLOR TV LOUNGE
- RESTAURANT • COCKTAIL LOUNGE
- PLANNED ENTERTAINMENT
- DELUXE ROOMS & EFFICIENCY SUITES

SEE YOUR TRAVEL AGENT OR WRITE
PAUL F. GOCKE, MANAGER
CL 2-0431



1015 S. ATLANTIC AVE.
DAYTONA BEACH
FLORIDA

Purchasing News

Not powder puffs or sponges—but pushbroom fibers bunched to dry after treatment. Cut to size, they'll be fed into automatic machines which drill blocks and staple fibers into place at the A. Steiert & Son, Inc. plant at Hatfield, Pa., part of which is shown in the inset. In addition to manufacturing pushbrooms, Steiert also makes sweeper broom refills. At the right, mechanical street brooms filled with African fibers are shown completed and ready for shipment. Brooms are also supplied in synthetic fibers.

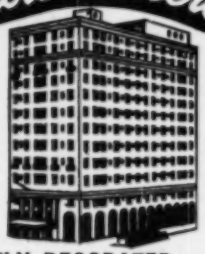
The scene is Detroit's new Cobo Hall convention arena. The equipment, a GMC tilt-cab rubbish truck, with a Gar Wood Load Packer body, one of 74 put into service recently by the City of Detroit. The vehicle is powered by one of GMC Truck & Coach Division's V-6 gasoline engines.

NEW CATALOG!

WRITE TODAY FOR
100-PAGE
Municipal Supplies Catalog
SPECIFY YOUR TITLE ON YOUR REQUEST

W. S. DARLEY & CO.
2000 ANSON DRIVE
MELROSE PARK, ILL.

Hotel Bossert



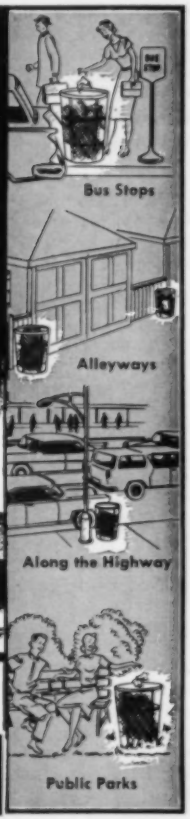
NEWLY DECORATED
UNDER NEW MANAGEMENT

- One subway stop from Wall St. — 15 min. from Times Square
- 400 Rooms
- 2 & 3 rm. suites, also kitchenettes
- Air-Conditioning
- Television
- Restaurant, Bar & Cocktail Lounge
- Banquet Facilities
- Convenient Parking

Singles from $5.50
Suites from $12.00

MA 4-8100
Montague & Hicks Streets
BROOKLYN HEIGHTS, 1
NEW YORK

DEMCOR E-X-P-A-N-D-E-D METAL
LITTER BASKETS
Help keep your city CLEAN



★ Durable ★ Rigid ★ Weather Proof
★ Low-cost ★ Galvanized ★ Built to last
Write for complete description and prices

DESIGNERS METAL DIVISION
of Southern Electric, Inc.
8701 S. Greenwood Ave. • Chicago 19, Ill.

ABOUT PEOPLE

John E. Everson was elected to partnership and John O. Bickel, having reached retirement age, retired as a general partner of **Parsons, Brinkerhoff, Quade & Douglas.** Mr. Everson continues in charge of the consulting engineering firm's San Francisco, Calif. office, and Mr. Bickel will continue with the firm as a consultant.

A. Conant Moulton is now director of public relations of **Fairbanks, Morse & Co.,** Yonkers, N. Y.

Carus Chemical Company, Inc., LaSalle, Ill., reports that Thomas H. McCormack has been named vice president and chairman of the policy committee.

Donald W. Waack has been named manager of sales promotion at **Bucyrus-Erie Co.,** South Milwaukee, Wis. He had been assistant sales development manager for Schield Bantam Co., Waverly, Iowa, and was associated with the Iowa firm for eight years.

Donald Waack

Bailey Meter Co., Cleveland, Ohio, has assigned three managers to new districts. R. T. Cowan, former Detroit manager, has been appointed manager of the Chicago district; J. A. Lucas, former Milwaukee manager, has been named manager of the Detroit district. R. E. Byers, former Memphis manager, has been appointed manager of the Milwaukee district.

I. E. Boberg was elected to the board of directors of the **Chicago Bridge & Iron Co.** He has been CB&I's chief engineer since 1945 and engineering vice president for the past four years.

R. L. Hanes is now vice president in charge of sales of the Western Division of **The Colorado Fuel and Iron Corporation** and E. George Hartmann is vice president in charge of sales of the Wickwire Spencer Steel and John A. Roebling's Sons Division of the corporation.

Kerrigan Iron Works Co., Nashville 2, Tenn., manufacturer of street, highway and area lighting standards, traffic signal, sign and floodlight structures, announces the appointment of Tom Barney as sales manager of Kerrigan Lighting Products. Mr. Barney was most recently associated with Pfaff & Kendall as general sales manager.

Tom Barney

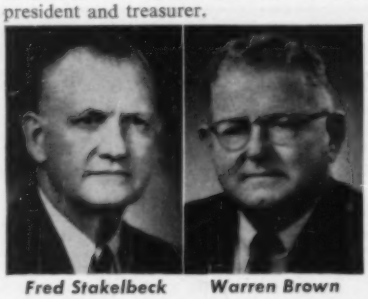
Dorr-Oliver Incorporated, Stamford, Conn., has transferred Thomas R. Tucker, sales engineer, from D-O Georgia office to the D-O California office, Los Angeles, and William J. Montanaro, sales engineer, from its headquarters at Stamford to the Atlanta, Ga., office.

Edward C. Koch has been appointed vice president of the **Orangeburg Manufacturing Company,** New York, division of The Flintkote Co. He will be in charge of sales for Orangeburg's asbestos-cement pipe products, which will be produced in a new $10 million plant to be built at Ravenna, Ohio.

Edward Koch

J. D. Walker, president of **Walker Process Equipment Co.,** Aurora, Ill., has announced the appointment of the Ray Lindsey Company, Prairie Village, Kans., as their sales-engineering representative in western Missouri and Kansas.

J. E. Linden was elected executive vice president of the **De Leuw, Cather Company, Engineers,** Chicago 6, Ill. He replaces L. H. Cather who has asked that his duties be lightened for reason of health. Mr. Cather continues as vice president and treasurer.



Fred Stakelbeck *Warren Brown*

Executive changes have been announced by the board of directors of **R. D. Wood Co.,** Florence, N. J. Warren A. Brown, formerly vice president, is now chairman of the board of directors and Fred W. Stakelback is now president and chief executive officer.

Charles W. Krause, general sales manager of **Neptune Meter Co.,** Long Island City 1, N. Y., has announced that John J. Whitney will represent the company in the State of Kansas.

Charles M. Weinberg, president and chairman of the board of **Wayne Manufacturing Co.,** Pomona, Calif., and a leading figure in the heavy equipment industry for 40 years died in Los Angeles on October 3. Gil M. Wayne, previously executive vice president of the firm and chief operations officer, has been named to succeed his father as president. John E. Grauman is now vice president-operations.

Kenneth R. Daniel has been elected executive vice president of the **American Cast Iron Pipe Co.,** Birmingham, Ala. Prior to this promotion, he was vice president in charge of engineering and purchases. Mr. Daniel has been associated with Acipco since June of 1936.

Kenneth Daniel

Daniel J. Saunders, former vice president of Pfaudler Permutit Inc., has opened an office at 70 Pine St., New York 5, N. Y., where he will engage in a wide range of management, sales and other consulting work for companies manufacturing engineered products. He will also act in a consulting capacity to organizations desiring technical services, where surveys, specifications, and recommendations are desired covering water and waste problems.

Henry M. Ford, who recently retired from state service, has joined the staff of **Mead and Hunt, Inc.,** Consulting Engineers, Madison, Wis., where he will be a planning and engineering coordinator in city and regional planning.

Donald R. Makins has been named advertising manager of Austin-Western, Construction Equipment Division of **Baldwin - Lima - Hamilton Corporation,** Aurora, Ill., according to an announcement made by Henry P. Lockhart, assistant general manager.

Donald Makins

Homer L. Marrs, national sales director for the Communications Division of **Motorola, Inc.,** Chicago 51, Ill., has been named vice president, sales, for the division, and William J. Weisz, manager of Mobile and Portable Communications Products in the Communications Division, is now vice president, communications products, for the Division. Both announcements were made by Robert W. Galvin, president of Motorola, Inc.

William Weisz *Homer Marrs*

Special report to users of Caterpillar D7, D8 and D9 Tractors:

CAT CATERPILLAR

Parts you can trust
...cost less per hour

New Piston and Ring Combination Cuts Oil Consumption 33-50% ...Lasts Hundreds of Hours Longer!

What makes it so different? Look at the two Caterpillar-made pistons. Notice in the new design that *both* compression rings are now deeply seated in grooved cast iron (indicated in yellow) instead of only the top ring. Since cast iron is able to resist groove "pound out," both compression rings are held firmly *longer* in the correct position for maximum ring-to-liner sealing. Compression loss and blow-by *behind* rings and around grooves is delayed hundreds of hours, too.

The new intermediate compression ring is a "twist" ring, so-called because it changes position in the groove during the power stroke. It actually "twists" so its face has *greater sealing area* at the liner than regular rings—reducing the number of compression rings normally required. At the same time, it thins the film of oil left by the regular oil control ring. This leaves less oil to burn away which contributes to the new piston's better oil control and longer ring life.

All rings now have a new look, too . . . *each and every* face is thickly chrome plated against wear. They are also "bright lapped" to such brilliance that any flaws can be easily seen and the faulty ring rejected. Such quality control assures almost perfect seating right from the start, eliminating break-in blow-by, slobbering and scuffing.

Cost? Pistons with the *extra* cast iron bands cost *slightly more*, but ring sets are less! Once you change over, your tractor maintains its power longer, your fuel and oil bills go down, and your next set of replacement rings will be less. Your Caterpillar Dealer has them in stock now.

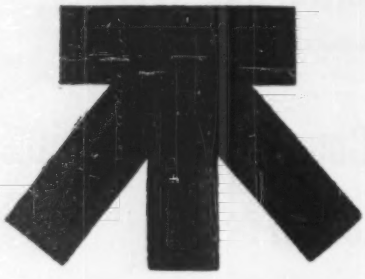
Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

DOWN TO FUNDAMENTALS



BASIC TRIPOD DESIGN

No instrument is better than its tripod. As an essential part of its down-to-fundamental concept in Surveying Instruments, KERN has pioneered radically new, functional tripods designed to augment the efficiency of its functional instruments. These afford maximum stability, regardless of location, are little affected by wind and require minimum set-up time.

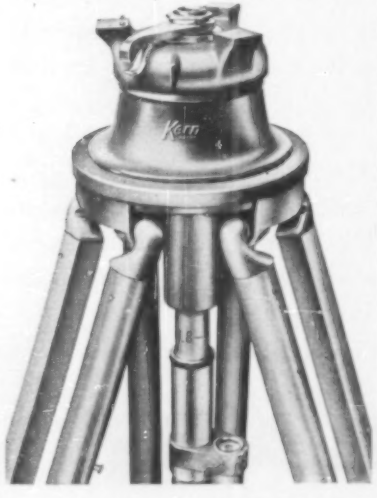
PROMPT, RELIABLE SERVICE
FACTORY TRAINED TECHNICIANS

KERN
INSTRUMENTS, INC.
FUNDAMENTAL SURVEYING EQUIPMENT
120 Grand St., White Plains, N.Y.

Unique Centering Tripod

Levels and centers instrument in seconds with remarkable accuracy. Assures exceptional stability with ball-and-socket head. Bayonet type instrument coupling. Ideal for Autocentering. All-metal tripods available.

For Complete Details Write for Brochure K607



CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. So., New York 16, N. Y.

SENIOR CITY ENGINEER

. . . for City of Elmira, New York. Degree in Civil Engineering with minimum of four (4) years experience required. Must have or be eligible for a New York State Professional Engineer's License. Salary range $6708 to $8268 per annum. Send resume to William A. Branagan, City Manager, City Hall, Elmira, New York.

ASSISTANT HYDRAULIC ENGINEER

N. Y. State Conservation Dept. Salary $7360 to $8910. Requires one year in hydraulic engineering or in the supervision or operation of a public water supply system, and five additional years of pertinent training and/or experience. N. Y. State residence is not required. For information, write to Recruitment Unit, Box 36B, N. Y. State Dept. of Civil Service, State Campus, Albany 1, N. Y.

Filtration Plant Supervisor to $786 per month

Direct the operation of a major water treatment plant. Equivalent of college degree in sanitary engineering, chemistry, or bacteriology and two years supervision of water treatment plant operation and maintenance. Apply to the City of San Diego, Room 453, Civic Center, 1600 Pacific Highway, San Diego, California.

Assistant to Director of Public Works

for the City of Oakdale, California.

Minimum Requirements

1. Civil Engineer (California registration required).
2. Two years combined field surveying and office experience; must have experience in street, water, and sanitary engineering.
3. Must have ability to design drainage, water and sewer systems.
4. Must have personality compatible with good public and employee relations.

Interested applicants write to: R. F. Henley, Director of Public Works, P. O. Box 305, Oakdale, California, giving brochure of education, experience, age, draft status, marital status and other pertinent information.

Personal interviews will be required. Dates will be arranged for interviews after study of applicants' brochures.

Salary Open.

MANUFACTURER'S REPRESENTATIVES

With good contacts among city and town officials to handle waste receptacle line on commission basis. Age unimportant, but proven ability to sell in this field imperative. Territories available throughout the U.S.A. Give details of territory in initial letter. Reply to Box 134, THE AMERICAN CITY, 470 Park Avenue South, New York 16, New York.

Water Plant Superintendent Water Distribution Superintendent

Mid-Western University City of 40,000 population is accepting applications for the above positions.

The City has recently assumed operation of the Water Utilities and the position offers a real challenge for competent and experienced men.

Salary open, liberal vacation, sick leave, etc.

Reply Box 133, THE AMERICAN CITY, 470 Park Avenue South, New York 16, New York.

Director of Public Works

. . . for City of El Paso, Texas (pop. 276,000). Newly created position. Position includes direction and control of all public works departments. Engineering degree and 15 years experience. Minimum age 35. Closing date November 30, 1961.

Write: James H. Ewell, Director of Personnel, City of El Paso, Texas.

Director of Public Works—City Engineer

The City of Bloomington, Minnesota (pop. 54,000) is accepting applications for the position of Director of Public Works—City Engineer. Applicants must be registered Civil Engineers with at least five years' experience in Public Works and Engineering. Starting salary $9,000 to $12,500 depending on experience. Send resume to: City Manager, City of Bloomington, City Hall, Bloomington 20, Minn.

BUSINESS ADMINISTRATOR

. . for the Township of Berkeley Heights, New Jersey. Area—6 square miles. Pop.—9,000. Ultimate—16,000. Five years experience in municipal management required, with educational background in municipal government. Salary open and will be commensurate with experience and ability. Please submit resume to Mr. William C. Russo, Town Clerk, 29 Park Avenue, Berkeley Heights, N. J.

The American City
Professional Service Directory

ALBRIGHT & FRIEL INC.
Consulting Engineers
Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Controls, Industrial Buildings, Investigations, Reports, Appraisals and Rates.
Three Penn Center Plaza
Philadelphia 2, Pa.

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSE

ALVORD BURDICK & HOWSON
ENGINEERS
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
20 North Wacker Drive, Chicago 6, Ill.

AURNHAMMER, JESKE & AURNHAMMER
Consulting Engineers
Water Supply & Treatment
Sewerage & Sewage Disposal
Industrial Waste Treatment
Storm Drainage & Flood Control
Municipal Planning & Development
Reports, Plans, Specifications & Construction Supervision
47 River Road — Summit, N. J.

JOHN J. BAFFA
Consulting Engineers
Drainage — Swimming Pools
Sewerage — Water Supply & Treatment
Sewage Treatment — Industrial Wastes
Refuse Disposal — Rate Studies
75 West St. — New York 6, N. Y.

SCOTT BAGBY
ROBERT CATLIN
Modern Comprehensive City and Area Planning and Development
"Plans Which Can Be Carried Out"
45 Broadway, Denville, N. J.
1500 Margaret S. E., Grand Rapids, Mich.

MICHAEL BAKER, JR., INC.
Consulting Engrs., Planners, Surveyors
Airport, Highway & Bridge Design; Water & Sewerage, Municipal Engrg.; Photo Mapping, City Planning, Urban Renewal & Redevelopment; Soils Lab; Complete Survey Service
Home Office: Rochester, Pa., Baker Bldg., Jackson Miss., Northview Dr., Charleston, W. Va., 19 Dunbar St., Harrisburg, Pa., 2799 N. Fourth St.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

ABBOTT & ADAMS INC.
Real Estate Appraisers & Consultants
Urban Renewal — Re-Use Appraisals — Economic Studies
Market Analysis — Marketabilty Programs — Redevelopment Studies
292 Madison Avenue, New York 17, N. Y. — MUrray Hill 6-1900

Abrams Aerial Survey Corporation
Over one-third century of Experience
Complete facilities for all aerial photography, processing, photogrammetric drafting and reproduction.
Planimetric topographic maps and profiles. Large scale atlas sheets. Infra-red for forestry analysis.
606 E. SHIAWASSE STREET — LANSING 1, MICHIGAN

AERIAL SURVEYS, INC.
Maps and Aerial Photographs
For all Planning and Engineering Purposes
4614 Prospect Ave. — Cleveland 3, Ohio

EXPERIENCE COUNTS: Dependable Photo Maps, Topographic Maps, Tax Maps
Land Use Inventories
AERO SERVICE CORPORATION
Oldest Flying Corporation in the World • Founded 1919
HEADQUARTERS: 210 E. Courtland St., PHILADELPHIA 20. OFFICES: 1401 S. Detroit St.
TULSA; 34 Richard St., SALT LAKE CITY 10; 68 Post St., SAN FRANCISCO

AIR SURVEY CORPORATION
Aerial Photography
Precise Engineering Mapping
1101 LEE HIGHWAY — ARLINGTON 9, VA.

WEED CONTROL PROGRAMS
AQUATIC • TERRESTRIAL • HIGHWAY • STREET
ALLIED BIOLOGICAL CONTROL CORP.
19 Milk Street, Boston 9, Mass. • HAncock 6-7009
Biological Surveys Made of Weed Infested Water Recreation Areas

ALSTER & ASSOCIATES, INC.
ENGINEERS
PHOTOGRAMMETRIC ENGINEERING •
TOPOGRAPHIC & PLANIMETRIC MAPS •
AERIAL MOSAICS • PRECISE FIELD SURVEYS
6135 Kansas Ave., N.E. • TA 9-1167 • Washington 11, D. C.

JACK AMMANN, INC.
Thirty years of experience to serve you!
TOPOGRAPHIC · PLANIMETRIC · PLAN-PROFILE · DIGITAL DATA
AERIAL PHOTOGRAPHY, COLOR · BLACK AND WHITE · MOSAICS
ENGINEERS and SURVEYORS
Broadway at Tenth, San Antonio 5, Texas

AMERICAN AIR SURVEYS, INC.
Aerial Topo Maps • Aerial Photos & Mosaics • Tax Maps
907 PENN AVE., PITTSBURGH 22, PA.
BRANCHES: MANHASSET, N. Y.—ATLANTA, GA.—A NATIONWIDE SERVICE

AMERICAN WASTE DISPOSAL DESIGN & ENGINEERING CO.
"Complete Refuse Disposal Service By Incineration"
Surveys and Reports—Preliminary Designs and Renderings
Construction Drawings and Specifications—Supervision
Air Pollution Control Counsel
59 South Main Street, Winchester, Kentucky PI 4-3282
5710 East Nevada, Detroit 34, Mich. FO 6-2812

Municipal Tax Revaluations — Appraisals
ASSOCIATED SURVEYS
Real and Personal Property Tax Maps
29-31 Howe Ave., Passaic, N. J.
311 Bellemeade St., Greensboro, N. C.
124 West Washington, Fort Wayne, Ind.
1105 Nelson Bldg., Charleston, W. Va.

B & B ENGINEERING CORPORATION
FIRE ALARM, TRAFFIC AND PROTECTIVE SIGNALING
MAIN OFFICE, NORWOOD, LOUISIANA
TELEPHONE, WILSON, LA., 46-J

JOHN J. BEHRENDS AND ASSOCIATES
Consulting Engineers
SPECIALIZING IN
TRAFFIC — PARKING — REPORTS — SURVEYS
801 SOUTH BLVD., OAK PARK, ILL. ST. PETERSBURG, FLA.

BENHAM ENGINEERING COMPANY
and Affiliates
Oklahoma City, Oklahoma — Phoenix, Arizona

BLACK & VEATCH
Consulting Engineers
Water Supply, Water Purification, Electric Lighting, Power Plants, Sewerage, Sewage Disposal, Gas, Valuations, Special Investigations and Reports.
1500 Meadow Lake Parkway — Kansas City 14, Missouri

BROWN ENGINEERING COMPANY
Consulting Engineers
K. P. Building — Des Moines 9, Iowa

BUCHART-HORN (Buchart Engineering)
Consulting Engineers
Airfields—Air Conditioning—Bridges—Community Planning—Dams—Heating
Highways—Industrial Plants—Research & Development
Soils & Foundations—Urban Renewal Projects—Water & Sewers
Home Office: York, Pennsylvania
Lancaster, Johnstown, Pa.—Baltimore, Md.—Washington, D. C.—Santurce, Puerto Rico

BUCK, SEIFERT AND JOST
Consultng Engineers
Water Supply, Sewage Disposal, Hydraulic Developments, Valuations and Reports.
Chemical and Biological Laboratories.
112 East 19th Street — New York 3, N. Y.

BANISTER ENGINEERING CO.
Consulting Engineers
Staffed to completely fill municipal requirements for professional services.
340 North Snelling Ave.
St. Paul 4, Minnesota
Tel. Midway 6-2612

R. L. Banks & Associates
Transportation Consultants
Rapid Transit
Commuter Railroads
Airports & Air Service
1001 15th Street N. W.
Washington 5, D. C.

E. D. BARSTOW
Sanitary Engineer
Water Supply—Water Treatment
Sewerage—Sewage Treatment
Reports—Plans—Construction
163 N. Union St., Akron 4, Ohio

HARLAND BARTHOLOMEW AND ASSOCIATES
City Planners — Civil Engineers
Landscape Architects
317 N. 11th St. St. Louis, Mo.
815-17 Street Washington, D. C.
925 Bethel Street Honolulu, H.
188 Jefferson Ave. Memphis, Tenn.
120 Marietta St. Atlanta, Ga.

HOWARD K. BELL
CONSULTING ENGINEERS, INC.
Water Works — Swimming Pools
Industrial Wastes — Garbage Disposal
Sewerage — Drainage
Valuations — Rates — Reports
Operation Supervision
553 S. Limestone St. Lexington, Ky.

Black, Crow and Eidsness, Inc.
Engineers
Water, Sewerage, Power, Recalcination, Hydrology, Valuation Rate Studies
Gainesville, Fla. Boca Raton, Fla.

CLINTON BOGERT ENGINEERS
Consultants
Ivan L. Bogert — Robert A. Lincoln
Charles A. Manganaro — William Martin
Water & Sewage Works — Incinerators
Drainage — Flood Control
Highway and Bridges — Airfields
145 East 32nd St., New York 10, N. Y.

Bonham, Kuck, Grant and Brundage
H. E. Bonham — Nye Grant
Carl E. Kuck — J. M. Brundage
Consulting Engineers
Sewage and Industrial Waste Treatment
Water Supply and Purification
4954-58 N. High St., Columbus 14, O.

LOUIS P. BOOZ
Consulting Engineer
Incineration
Sanitation
Water Treatment
Industrial Wastes
51 E. 42 St., New York 18, N. Y.

Bowe, Albertson & Associates
Engineers
Sewage and Water Works
Industrial Wastes
Refuse Disposal
Valuations
Feasibility Reports
Laboratory Service
75 West Street — New York 6, N. Y.

Briley, Wild & Associates
Consulting Engineers
Reports Supervision
Designs Appraisals
Consultations
8. N. Wild Olive Avenue
Daytona Beach, Florida

BURGESS & NIPLE
CIVIL AND SANITARY ENGINEERS
WATER AND SEWAGE CONSULTANTS
2015 WEST FIFTH AVENUE COLUMBUS 12, OHIO
Philip Burgess
Chester A. Niple
Ben K. Bare
Clayton C. Bull
B. F. Hatch
Raymond Fuller
Tehiman Krumm
R. E. Peters
Robert Wolfe
Design
Construction
Reports
Planning
Valuations
Rates
Supervision
Laboratory

FLOYD G. BROWNE AND ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Power and Industrial Plants, Industrial Waste, Laboratory Reports, Design, Supervision.
123 W. Church St., Marion, Ohio

BURGWIN & MARTIN
Consulting Engineers
Surveys, Reports, Design and Supervision
Bridges & Structures, Highways & Streets, Water Supply & Sewage Treatment, Dams, Foundations, Airfield, Traffic & Parking, Community Planning, Telephone Communications
408 W. Seventh St. Topeka, Kansas
115 E. Armour Blvd. Kansas City 11, Missouri
728 Delaware St. Denver 4, Colorado

CAMP, DRESSER & McKEE
Consulting Engineers
Water Works, Water Treatment, Sewerage, Sewage Treatment, Municipal, Industrial Wastes, Investigations, Reports, Designs, Supervision, Research, Development, Flood Control.
18 Tremont St., Boston 8, Mass.

RALPH H. BURKE, INC.
Complete Consulting Engineering and Architectural Services
Plans Construction Supervision Reports
Expressway Grade Separation Municipal Works
Underground Garages Parking Structures Traffic Studies
Airports and Air Terminals Buildings Parks Field Houses Shore Protection
Swimming Pools Marinas Artificial Ice Rinks
20 North Wacker Drive, Chicago 6, Ill. 506 Higgins Road, Park Ridge, Ill.

CANDEUB, FLEISSIG & ASSOCIATES
Consulting Municipal Planners
Community Planning, Urban Renewal Studies, Regional Planning.
32 Green Street, Newark 2, New Jersey

BURNS & McDONNELL
ENGINEERS — ARCHITECTS — CONSULTANTS
4600 E. 63rd St. Trafficway Kansas City 41, Missouri

Capitol Engineering Corporation
Consulting Civil Engineers
Dillsburg, Pennsylvania, U.S.A.

HOMER L. CHASTAIN & ASSOCIATES
Consulting Engineers
Civil, Structural, Mechanical, Industrial Design & Supervision, Construction, Engineering, Turnpikes, Bridges, Water Supply, Sewerage, Flood Control & Drainage, Material Controls, Municipal Engineering, Topographic Surveys.
155½ WEST MAIN STREET DECATUR, ILLINOIS

THE CHESTER ENGINEERS
Water Supply and Purification
Sewage and Industrial Waste Treatment—Power Plant—Incineration—Gas Systems
Valuations—Rates—Management
Laboratory—City Planning
801 Suismon St.
Pittsburgh 12, Pa.

Chicago Aerial Survey
10265 Franklin Ave.
Franklin Park, Ill. GLadstone 1-0380
A Division of Chicago Aerial Industries, Inc.
Aerial photography since 1923. Complete photogrammetric services for city, county, highway and consulting engineers. Developers of Sonne Strip Photography.
PHOTOGRAMMETRIC ENGINEERS
- Base maps and atlas sheets.
- Precise topographic maps for sewerage studies, construction planning and site location.
- Scaled mosaics and pictorial presentations.
- Highway studies. Street and road maps, Sonne photography.

Bring Your Professional Services
to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

city planning associates, inc.
URBAN RENEWAL CONSULTANTS
CITY PLANNERS • ARCHITECTS • ENGINEERS • LANDSCAPE ARCHITECTS
708 south main street • MISHAWAKA, INDIANA • BLackburn 9-5281

WILLIAM G. CHRISTY
Consulting Engineer
Air Pollution Control
Combustion Smoke Control
154 E. Main St., Lansdale, Pa.

CLARK AERIAL SURVEY CORP.
Custom Service
Topographic Maps — Mosaics — Reconnaissance Strips — All Types of Aerial Photography
Frank T. Lodge II, President
3444 Highland Road (M-59) GLenview 3-5430 Pontiac, Michigan

CLARK, DAILY AND DIETZ
Consulting Engineers
Sewerage, Waterworks, Street Lighting, Highway, Swimming Pools, Surveying and Mapping, Land Development Studies, Bridges, Buildings, Foundations.
211 North Race St. Urbana, Illinois
188 Jefferson St. Memphis, Tennessee

THE J. M. CLEMINSHAW COMPANY
"Our 39th Year"
APPRAISALS — REVALUATIONS
Specializing in the revaluation of Real Estate and Personal Property for local tax equalization purposes. Illustrated brochure on request.
1601 BROOKPARK ROAD, CLEVELAND 9, OHIO

C. C. COLLINGS & CO., Inc.
Financial Consultants
Specialists in Direct Obligation, Revenue & Municipal Authority Financing
Fidelity-Philadelphia Trust Bldg.
Philadelphia (9), Penna.

CHAS. W. COLE & SON
Engineers and Architects
3600 E. Jefferson Blvd. South Bend, Indiana
2112 W. Jefferson St. Joliet, Illinois.

REVALUATIONS
CLT
APPRAISALS
COLE • LAYER • TRUMBLE CO. / 11 W. MONUMENT AVE. • DAYTON 2, O.
Municipal Tax Revaluations / Illustrated Brochure on Request

CONSOER, TOWNSEND & ASSOCIATES
Consulting Engineers
Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highways and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.
360 EAST GRAND AVENUE — CHICAGO 11, ILLINOIS

DAMON & FOSTER
Consulting Civil Engineers and Surveyors
Water Supply, Sewerage, Sewage Disposal, Surveys, Land Subdivision, City and Town Planning. Reports, Design, Supervision
Sharon Hill — Pennsylvania

DAY & ZIMMERMANN, INC.
CONSULTING ENGINEERS
INCINERATOR PLANTS — POWER PLANTS
VALUATIONS AND APPRAISALS — TRAFFIC AND TRANSIT
NEW YORK — PHILADELPHIA — CHICAGO

DE LEUW, CATHER & COMPANY
Consulting Engineers
Public Transit — Expressways — Urban Renewal — Railroad Facilities — Municipal Works
Traffic & Parking — Grade Separations — Subways — Industrial Plants — Port Development
150 North Wacker Drive, Chicago 6 — San Francisco — New York — Boston

DRAKETOWN
PROPANE PLANTS
☆ *Standby* ☆ *Augmentation* *100% Town Supply*
DESIGN • ENGINEERING • CONSTRUCTION
DRAKE & TOWNSEND, INCORPORATED
11 WEST 42nd STREET — NEW YORK 36, N. Y.

EDWARDS AND KELCEY
Engineers and Consultants
Traffic — Transportation — Parking — Expressways — Airports — Public Works
Surveys — Reports — Design — Supervision
3 William Street, Newark 2, New Jersey
Boston — Providence — Salt Lake City — New York — Minneapolis

ETL
ELECTRICAL TESTING LABORATORIES, INC.
Electrical, Electronic, Environmental, Photometric and Chemical Laboratories, Testing, Research, Inspection and Certification
In-Plant Acceptance and Witness Testing
Wire and Cable—Paper—Street Lighting Fixtures
Checking of Instruments and Apparatus
2 EAST END AVENUE, NEW YORK 21, N. Y.

EMPIRE GAS ENGINEERING CO. • *P. O. Box 1738, Atlanta 1, Georgia*
LP-gas peak shaving and stand-by plants for • municipalities • industry • design • construction

EWIN ENGINEERING CORPORATION
Engineers — Consultants
Municipal Planning—Highways—Urban Renewal—Public Transit—Sewage Systems—Water Systems—Bridges—Port and Harbor Development
Washington 16, D. C.—5104 MacArthur Boulevard, N. W.
150 Savannah Street, Mobile, Alabama — DuPont Plaza Center, Miami, Florida

Crawford, Murphy & Tilly
Consulting Engineers
Water and Sewerage Systems—Sewage and Wastes Treatment—Storm Drainage
Flood Control—Impounding Reservoirs—Swimming Pools
Streets—Highways—Airports
Traffic and Parking Studies
Surveys and Reports
755 South Grand West
Springfield, Ill.

Fay, Spofford & Thorndike, Inc.
Engineers
Airports—Bridges—Express Highways
Port Developments Water Supply
Sewerage and Drainage Systems
Industrial Buildings Incinerators
11 Beacon St.
Boston 8, Massachusetts

Finkbeiner, Pettis & Strout
Consulting Engineers
Water Supply, Water Treatment, Sewerage, Sewage Treatment, Bridges, Highways & Expressways.
2130 Madison Avenue, Toledo 2, Ohio

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

FRIDY-GAUKER-TRUSCOTT & FRIDY
Architects—Engineers
Water Supply & Treatment, Sewers & Waste Disposal, Incineration, Roads, Airports, Power & Lighting, Schools, Private & Municipal Buildings.
Reports, Plans, Supervision
1321 Arch Street, Philadelphia 7, Pa.

GEE & JENSON
Consulting Engineers, Inc.
Municipal Utilities & Services
Ports & Terminals
Airports & Industrial Planning
Feasibility Reports — Land Planning
Cocoa — Ft. Myers — Dunedin
2019 Okeechobee Road,
West Palm Beach, Florida

GREELEY & HANSEN
Engineers
Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
14 East Jackson Blvd.
Chicago 4, Illinois

Haskins, Sharp & Ordelheide
Consulting Engineers
Water—Sewage & Industrial Wastes—Hydraulics
Reports, Design, Supervision of Construction, Appraisals, Valuations, Rate Studies
1009 Baltimore Ave., Kansas City 5, Mo.

HAVENS AND EMERSON
A. A. Burger — J. W. Avery
F. S. Palocsay — E. S. Ordway
G. H. Abplanalp — A. M. Mock
S. H. Sutton
Frank C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Water, Valuations—Laboratories
Leader Bldg. — Woolworth Bldg.
Cleveland 14, O. — New York 7, N. Y.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

HAZEN AND SAWYER
Engineers
Richard Hazen Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
360 Lexington Ave., New York 17, N.Y.

ANGUS D. HENDERSON
Consulting Engineers
Angus D. Henderson, Thomas J. Casey
Water Supply and Sanitation
330 Winthop St., Westbury, N. Y.
210-07 29th Ave., Bayside, N. Y.

Harry Hendon & Associates, Inc.
Engineers
Civil Engineers — Public Utilities
Investigations — Designs
Supervision of Construction
P. O. Box 7404A 925 Sligh Blvd.
Birmingham 13, Ala. Orlando, Florida

HENNINGSON DURHAM & RICHARDSON
Consulting Engineers since 1917 for more than 700 cities and towns
Water Works, Light and Power, Sewers, Sewage Treatment, Reports, Flood Control, Appraisals, Drainage, Rural Electrification.
3555 Farnam St., Omaha 31, Nebraska

HILL and HILL
Engineers
Sewage and Waste Disposal,
Water Supply and Filtration
Dams, Reservoirs, Tunnels,
Airport and Topographic Survey
Home Office: 8 Gibson Street
North East, Pa.

Grand Junction, Colorado
P. O. Box 1915 - CH 3-1887
Holder Engineering Service
Civil Engineering Consultants
Specializing in Water Supply and Sewage Problems.
Moab, Utah. P. O. Box 562—AL 3-4126
Laramie, Wyoming
P. O. Box 284 - FR 5-6741

"WHO'S WHO"
City Departments can depend upon this directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

H. G. Holzmacher & Associates
Consulting Engineers
R. G. Holzmacher S. C. McLendon
Municipal Engineering
Water Supply & Treatment
Sewerage & Treatment
Water Analysis Laboratory
500 Broad Hollow Rd., Melville, N. Y.
66 West Marie St., Hicksville, N. Y.

C. H. HOPER & COMPANY
Utilities Engineers
Electric—Gas—Water—Sewer
Rates ● Financial and Economic Analyses ● Planning ● Feasibility Reports ● Valuations ● Organization and Management Studies
818 Seventeenth St. Denver 2, Colo.

Bring Your Professional Services
to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

36 YEARS OF CITY MAPPING EXPERIENCE
FAIRCHILD AERIAL SURVEYS,
Large scale photomaps . . . . detailed topographic mapping . . . automatic cross sectioning . . . planimetric maps . . . for all planning and engineering uses.
Los Angeles: 224 E. 11th Street ● New York: 10 Rockefeller Plaza ● Boston: New England Survey Service, Inc., 255 Atlntic Ave. ● Houston: 5043 Stillbrooke Drive ● Washington, D. C.: 1625 I Street N.W.

FIRE RESEARCH ASSOCIATES, INC.
Fire Consulting Service
RESEARCH — RECOMMENDATIONS — SURVEYS
Relating to Fire Administration; Engineering
Public and Private
Blaine-Walker Bldg., 9616 Culver Blvd., Culver City, Calif.

F B&D
Ford, Bacon & Davis
Design Engineers *Reports*
Construction *Valuation*
New York ● Chicago ● San Francisco ● Monroe, La.

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers
Dams, Water Works, Sewage, Industrial Wastes and Garbage Disposal, Highways, Bridges and Airports
Traffic & Parking—Appraisals, Investigations and Reports.
HARRISBURG, PENN.
Branch Offices
Pittsburgh, Pa. Daytona Beach, Florida Philadelphia, Pa.

GIBBS & HILLS, INC.
Industrial Wastes
Water & Sewage Works
Hydraulic Developments
Electric Transmission & Distribution Systems
Conventional & Nuclear Power Generation
Power Surveys & Contracts
Airports
Rapid Transit
Highways & Bridges
Pennsylvania Station, New York 1, N. Y.

GAI FOUNDED 1906
GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
Water Supply and Purification
Sewage Industrial Waste
Chemical Laboratory
New York READING, PA. Washington

HOWARD R. GREEN COMPANY *Established 1913*
Consulting Engineers
Municipal and Industrial Water Supply and Treatment; Sewerage and Disposal
Airports, Paving, Bridges, Industrial Structures
GREEN ENGINEERING BUILDING, CEDAR RAPIDS, IOWA

Charles W. Greengard Associates
consulting engineers
CHARLES W. GREENGARD ASSOCIATES
CIVIL ● SANITARY ● MUNICIPAL ● UTILITY
Reports — Plans — Supervision — Appraisals
DEERFIELD ILLINOIS

GRIFFENHAGEN-KROEGER, INC.
Consultants in Public Management
Experienced in City Organization and Methods—Finance—Personnel Practices—Departmental Policies and Practices—Automatic Data Processing—Complete Personnel Testing Services
64 Pine Street Other Offices: Los Angeles Washington, D. C. Chicago
San Francisco New York Philadelphia

L. B. GRIFFITH
Consulting Engineer
Research, Reports and Designs on Sewage and Industrial Waste Treatment.
450 West Broad St. Falls Church, Vt.

Hardesty & Hanover

Consulting Engineers

Bridges — Long Spans of All Types — Movable — Lift, Bascule and Swing — Hanover Skew Bascule — Steel and Concrete Spans — Grade Crossing Eliminations
Expressways and Thruways — Other Structures — Foundations — Supervision, Reports, Appraisals

101 Park Avenue — **New York 17, N. Y.**

FREDERIC R. HARRIS, INC.

Consulting Engineers

Economic Reports, Feasibility Studies, Design, Supervision of Construction, Waterfront and Harbor Improvements—Water Supply—Sanitary and Industrial Waste Disposal—Highways Foundations—Soil Mechanics

144 East 44th Street, New York 17, N. Y. — **1915 Tulane Avenue, New Orleans, Louisiana**

HARRIS, HENRY and POTTER, INC.

Engineers and Architects

Water Supply, Sewerage Systems, Flood Control, Bridges, Highways, Airports, Traffic, Foundations, Buildings, Reports, Investigations, Consultations

Chester, Pa. — **Buckingham, Pa.**

HARZA ENGINEERING COMPANY

Consulting Engineers

Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigations
River Basin Development

400 W. Madison Street — **Chicago 6, Ill.**

H E A T H

Survey Consultants, Inc.

Zero Laurel Ave.
Wellesley Hills 81, Mass.

GAS LEAKAGE CONTROL SURVEYS

- Provide SAFETY & a 3rd Party Audit
- Reduce unaccounted-for losses
- Assist in economical & effective maintenance-repairs
- Conserve & protect Natural Resources

H E M C O E N G I N E E R S

Sewerage & Wastes — **Natural Gas** — **Municipal Services**

Designers & Consultants

FALLS BUILDING — M E M P H I S

Water Supply — **Foundations** — **Bridges & Structures**

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

Consulting Engineers

Bridges, Structures, Foundations, Express Highways, Administrative Services

1805 Grand Avenue, Kansas City 8, Mo. — **99 Church Street, New York 7, N. Y.**

HUNNICUTT & ASSOCIATES

433 FOURTH ST., NO. ST. PETERSBURG, FLA.

COUNTY and MUNICIPAL — REVALUATION, ASSESSMENT MAPS, CONSULTANT SERVICE

OVER 30 YEARS' EXPERIENCE — *Brochure on request*

MARK HURD AERIAL SURVEYS, INC.

Aerial Photography — Tax Maps
Topographic and Planimetric Maps

345 Pennsylvania Avenue South — **Minneapolis 26, Minnesota**

WILLIAM T. INGRAM

Consulting Engineer

Water, Sewage, Refuse — **Sanitary and Public Health Engineering Planning—Design—Research** — Industrial Wastes, Air Pollution Control, Industrial Health

Offices: East Coast: 20 Point Crescent, Whitestone 57, N. Y. — West Coast: 90 Panoramic Way, Walnut Creek, Calif.

HORNER & SHIFRIN

Consulting Engineers

E. E. Bloss — **V. C. Lischer**

Airports, Sewerage & Drainage, Hydrology, Sewage Treatment, Industrial Waste Treatment, Water Supply & Treatment, Paving, Structures, Industry Engineering Services

1221 Locust Street, St. Louis 3, Mo.

Harold Hoskins & Associates

Consulting Engineers

Sewers and Sewage Treatment
Paving — Water Supply — Drainage
Bridges — Airports — Reports
Power Plants Surveys
Aerial Photogrammetry

1630 Que St., Lincoln, Nebr.
1018 8th Ave., Greeley, Colorado

ROBERT W. HUNT CO.

Consulting Engineers

Inspection—Tests — Consultation
Pipe and Appurtenances; Paving and Engineering Materials; Green and Treated Lumber

810 S. Clinton St., Chicago 7 and all large industrial centers.

Bring Your Professional Services to the attention of municipal officials who consult this Directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.

Write us for particulars

THE AMERICAN CITY
470 Park Avenue South, New York 16

Jenkins, Merchant & Nankivil

Consulting Engineers

Municipal Improvements — Gas Systems
Highways & Airports — Water Systems
Power Development — Sewerage Systems
Traffic Surveys — Industrial Plants
Flood Control — Recreational Facilities
Investigations and Reports

801-805 East Miller St., Springfield, Ill.

THE JENNINGS-LAWRENCE CO.

Civil & Municipal Engineers

Water Supply—Treatment—Distribution
Sewerage—Sewage Treatment—Paving
Drainage—Dams — Surveys—Mapping
Reports — Plans—Supervision

1392 King Ave., Columbus 12, Ohio

Johnson & Anderson, Inc.

Engineers

Sewerage & Sewage Treatment
Water Supply & Distribution
Bridges—Highway
Municipal Engineering
Flood Control and Drainage

Home Office: Pontiac, Mich.
Branch Office: Warren, Mich.

Johnson Depp & Quisenberry

Consulting Engineers

Highways — **Water Supply**
Airports — **Sewage Disposal**
Bridges — **Surveys**

2625 Frederica St., Owensboro, Ky.

JONES, HENRY & WILLIAMS

Consulting Sanitary Engineers

Water Works
Sewerage and Treatment
Waste Disposal

2000 West Central Ave., Toledo 6, Ohio

"WHO'S WHO"

City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

The American City Professional Service Directory

Edward C. Jordan Co., Inc.
Civil and Sanitary Engineers
Sewerage ● Sewage Disposal ● Industrial Wastes ● Drainage ● Water Supply ● Streets ● Highways ● Municipal Engineering. Investigations—Reports—Designs—Supervision.
379½ Congress St., Portland, Maine
Tel. SP. 4031S

International
AERIAL MAPPING COMPANY
127 AIRPORT BLVD ★ SAN ANTONIO 9, TEXAS
TAYLOR 6-5681
PRESENTS A MUNICIPAL PROGRAM
OF
AERIAL PHOTOGRAPHY-PHOTO ATLAS SHEETS
MOSAICS AND TOPOGRAPHIC MAPS
WRITE FOR FREE COPY

Alfred Kaehrle Associates
Consulting Engineers
Highway Planning—Highway Design
Traffic Engineering Surveys
Parking Studies — Shopping Centers
10 North Main Street
West Hartford 7, Connecticut

J. L. JACOBS & COMPANY
Public Administration Consultants and Engineers Since 1915
Property Appraisals and Tax Equalization—Finance—Organization—Procedures
Fringe Area Problems—Facilities—Personnel Classification and Pay Plans
53 W. JACKSON BLVD., CHICAGO 4, ILL.

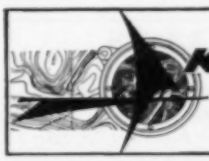
SANDERS A. KAHN ASSOC.
Real Estate—Planning
Urban renewal appraisals, marketability studies, shopping centers, industrial, terminals, aviation.
261 Madison Ave.
New York 17, New York
MUrray Hill 7-3363-4

KREHBIEL & KREHBIEL • engineers
Consulting
DRAINAGE PLANNING SEWERAGE WATER
HIGHWAYS POOLS SUBDIVISIONS
ICE RINKS REPORTS SURVEYS
1868 NIAGARA FALLS BOULEVARD • TONAWANDA, N. Y.

KAISER ENGINEERS
General Engineering Services
Public Works
300 Lakeside Drive
Oakland 12, Calif.
Phone: CRestview 1-2211

KENNEDY ENGINEERS
COMPLETE PUBLIC WORKS ENGINEERING SERVICE
● WATER SUPPLY
● SEWAGE RECLAMATION
● SEWAGE AND WASTE TREATMENT
CHEMICAL AND BIOLOGICAL LABORATORY
San Francisco
Los Angeles
Tacoma
Salt Lake City

JOHN J. KASSNER & CO.
Consulting Engineers
John J. Kassner David Levine
Preliminary Studies, Designs, Contracts, Specifications, Highways, Expressways, Structures, Drainage, Sewerage, Waterfront, Site Planning, Housing, Parking, Parks.
6 Church St. New York 6, N. Y.



KUCERA AND ASSOCIATES, INC.
PHOTOGRAMMETRIC ENGINEERS • AERIAL PHOTOGRAPHY
CLEVELAND 24, OHIO • CHICAGO, ILLINOIS
City Mapping • Aerial Engineering Surveys • Tax Maps • Atlas Sheets • Photo Mosaics • Nationwide Service

KEIS & HOLROYD
Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply and Purification, Sewerage and Sewage Treatment, Garbage and Refuse Disposal and Incineration, Industrial Buildings.
TROY, N. Y.

KONSKI ENGINEERS
Planning, Design and Supervision of Construction
Bridges, Highways, Dams, Airports and Industrial Structures
Parking Studies and Parking Structures
206 E. Jefferson Street Syracuse 2, New York

Kirkham, Michael & Associates
Consulting Engineers
Complete Municipal & Industrial Services—Investigations, Reports, Design, Supervision of Construction, Rates, Water—Sewage & Wastes—Light & Power—Streets—Airports—Bridges & Structures.
Omaha ● Rapid City ● Fargo

Designs • Surveys Planning
The Kuljian Corporation
engineers • consultants
construction supervision
1200 NORTH BROAD STREET, PHILADELPHIA 21, PA.
POWER PLANTS, AIRPORTS and AIRPORT FACILITIES
HIGHWAYS, EXPRESSWAYS, WATER and SEWAGE WORKS, FLOOD CONTROL, IRRIGATION
INDUSTRIAL PLANTS

A. C. KIRKWOOD AND ASSOCIATES
Engineers — Consultants
7800 The Paseo
Kansas City 10, Mo.

KOEBIG and KOEBIG
ENGINEERING ● ARCHITECTURE ● MUNICIPAL PLANNING
Reports ● Investigations ● Designs ● Consultants to Cities Since 1910
3242 W. 8th Street, Los Angeles 5, California
715 Bank of America Building, 625 Broadway, San Diego, California

Bring Your Professional Services
to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS
Studies — Reports — Designs — Supervision
Highways, Bridges, Site Planning, Industrial Buildings, Pipelines, Airports, Harbor Facilities, Traffic Analysis, Water Supply, Sewerage, Incinerators, Air Pollution, Seismic Investigations in addition to Aerial Photography, Cadastral Geodetic, Topographic and Photogrammetric Mapping.
Syosset, N. Y. Bogota, Columbia San Juan, P. R.

The American City Professional Service Directory

METCALF & EDDY

Engineers

Soils, Foundations, Waterworks, Sewage Works, Drainage, Irrigation, Flood Control, Refuse, Industrial Wastes, Airports, Highways, Military Projects, Industrial and Commercial Facilities.

Statler Building, Boston 16, Mass.

PAN AMERICAN CONSULTANTS

Engineers and Planners

Airports—Highways—Expressways—Rapid Transit—Monorail
City & Regional Planning—Urban Renewal—Commercial & Industrial Structures
Hydrology—Hydraulics—Flood Control—Basin Development—Dams—"Sea Water Conversion"
Waterways—Harbors—Marinas—Offshore Structures
Investigations—Reports—Planning—Design

400 Montgomery St., San Francisco 4, Calif. YUkon 1-8979

NUSSBAUMER -- CLARKE and VELZY, INC.

CONSULTING ENGINEERS

SEWAGE TREATMENT — WATER SUPPLY — INCINERATION
DRAINAGE — TOWN PLANNING — APPRAISALS

327 Franklin St., Buffalo 2, N. Y. 500 Fifth Ave., New York, N. Y.

PARSONS, BRINCKERHOFF, QUADE & DOUGLAS

Engineers

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Canals, Traffic, Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.

165 Broadway, New York 6, N. Y.

THE PITOMETER ASSOCIATES

Engineers

Water Waste Surveys Trunk Main Surveys Water Distribution Studies
Water Measurement and Special Hydraulic Investigations

50 Church Street New York 7, N. Y.

WILLIAM RAISCH

CONSULTING ENGINEER

REPORTS AND DESIGNS

REFUSE INCINERATOR AND SEWAGE TREATMENT PLANTS
MUNICIPAL AND INDUSTRIAL SEWAGE AND WASTES DISPOSAL
SEWERAGE AND DRAINAGE

61 HILTON AVE. GARDEN CITY, L. I. N. Y.

RAYNOR AERIAL SURVEYS

Topographic Maps City Planning Tax Maps Field Surveys
Complete Photogrammetric Services

MAIN OFFICE: CHASE BUILDING, NEW FAIRFIELD, CONN.

District offices: West Sand Lake N. Y. and Plymouth, N. H.

WATER PURIFICATION
SEWAGE TREATMENT
PLANT SUPERVISION
CORROSION CONTROL
INDUSTRIAL WASTE TREATMENT
STREAM POLLUTION INVESTIGATIONS

THOMAS M. RIDDICK & ASSOCIATES

Consulting Engineers and Chemists

369 EAST 149th STREET
NEW YORK 55, N. Y.
MOtt Haven 5-2424

LABORATORIES FOR
CHEMICAL
BACTERIOLOGICAL AND
MICROSCOPIAL ANALYSES
OF WATER, SEWAGE AND
INDUSTRIAL WASTES

Louis C. Ripa & Associates, Ltd.

Designers—Engineers
Planners—Surveyors

184 S. Livingston Ave., Livingston, N. J.

DESIGN, INVESTIGATION, REPORTS, PARKS, RECREATION AREAS, HIGHWAYS, EXPRESSWAYS, OFFICE AND COMMERCIAL BUILDINGS, RESIDENTIAL SUBDIVISIONS, TRAFFIC STUDIES, GEODETIC, GEODIMETER, TOPOGRAPHIC SURVEYS, SITE PLANNING, SHOPPING CENTERS

MORRIS KNOWLES, Inc.

Engineers

Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

1312 Park Bldg.
Pittsburgh 22, Pa.

LADD ENGINEERING ASSOCIATES

Architects—Engineers
Municipal Public Works

FORT PAYNE ALABAMA

Lorenzi, Dodds and Gunnill

Consulting Engineers

Serving Municipalities in Pennsylvania, Ohio, and West Virginia

1406 Berger Building
Pittsburgh 19, Pa.

Bring Your Professional Services

to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.

Write us for particulars

THE AMERICAN CITY
470 Park Avenue South, New York 16

LOZIER ENGINEERS, INC.

Sewerage, Sewage Disposal
Water Supply, Water Purification
Refuse Disposal

10 Gibbs St., Rochester 4, N. Y.

"WHO'S WHO"

City Departments can depend upon this directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

Lublin, McGaughy & Assoc.

Architects and Consulting Engineers

Water supply, sewage disposal, airports, streets, improvements, municipal planning, buildings, recreation facilities, reports and appraisals.

220 W. Freemason St., Norfolk 10, Va.
1001 Connecticut Ave., Washington, D. C.

McCLAVE & McCLAVE

Civil & Consulting Engineers

Established 1906

Municipal Problems, Surveys, Reports, Design, Supervision, Industrial Waste, Sewerage and Water Supply
Flood Control, Highways, Land Development

Cliffside Park, New Jersey
Tel. Cliffside 6-4000

CITY DEPARTMENTS

can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

The American City Professional Service Directory

McNamee, Porter and Seeley
Consulting Civil Engineers
Water Supply and Treatment
Sewerage and Sewage Treatment
Waste Disposal
2223 Packard Road
Ann Arbor, Michigan

GEORGE B. MEBUS, INC.
Consulting Engineers
Water Supply, Sewage Treatment
Industrial Waste Treatment
Broad Street Trust Bldg.
Glenside, Pa.

CHANGED YOUR ADDRESS?
If so, please notify the publishers as we are anxious to have your card correct in this Directory. Thank you.

DONALD M. OAKES
Public Management Consultant
2518 Foster
Grand Rapids 5, Michigan

O'BRIEN & GERE
Consulting Engineers
Water Supply, Treatment and Distribution
Sewerage and Sewage Treatment
Industrial Waste Treatment—Flood Control and Drainage
Rate Studies—Development Planning—Surveys
400 East Genesee St., Syracuse 2, N. Y.

PATZIG TESTING LABORATORIES
Inspection Service
Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, etc.
2215 Ingersoll Ave., Des Moines, Ia.

Malcolm Pirnie Engineers
Malcolm Pirnie, Carl A. Arenander
E. W. Whitlock, Malcolm Pirnie, Jr.
Robert D. Mitchell, Alfred C. Leonard
MUNICIPAL AND INDUSTRIAL
Water Supply—Water Treatment
Sewage and Waste Treatment
Drainage—Rates—Refuse Disposal
25 W. 43rd St. New York 36, N. Y.
3015 Horatio Street, Tampa 9, Fla.

ALEXANDER POTTER ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.
50 Church Street, New York 7, N. Y.

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

ROBERT AND COMPANY ASSOCIATES
MUNICIPAL ENGINEERING DIVISION
ATLANTA
Water Supply • Sewage Disposal • Industrial Wastes
Incinerators • Power Plants • Valuations

RUSSELL and AXON
Consulting Engineers
Civil—Sanitary—Structural—Industrial—Electrical—Rate Investigations
408 Olive Street, St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

SANBORN MAP CO., INC. *(Est. 1876)*
Dept. SP, Pelham, New York, Pelham 8-1649
Atlanta · New York · Chicago · San Francisco
NEW NATIONWIDE MAPPING, FIELD, AND ANALYTICAL SERVICES
ALL TYPES BASE MAPS — CUSTOM DESIGNED SERVICES FOR
PLANNERS, ASSESSORS, PUBLIC UTILITIES, MARKET ANALYSTS, ENGINEERS

IRBY SEAY COMPANY
Consulting Engineers
WATER SUPPLY & TREATMENT · SEWAGE SYSTEMS & TREATMENT
ELECTRICAL · NATURAL GAS
223 Court Avenue, MEMPHIS 3, TENNESSEE, Jackson 7-3301

SEELYE STEVENSON VALUE & KNECHT
Consulting Engineers
Airports, Highways, Dams, Bridges, Concrete, Steel, Welding, Foundations, Stadiums, APPRAISALS and REVALUATIONS for tax equalization
101 Park Avenue, New York 17, N. Y.

SERVIS, VAN DOREN & HAZARD
Engineers-Architects
Investigations • Design • Supervision of Construction • Appraisals
Water • Sewage • Streets • Expressways • Highways • Bridges • Foundations
Airports • Flood Control • Drainage • Aerial Surveys • Site Planning
Urban Subdivisions • Industrial Facilities • Electrical • Mechanical
2910 Topeka Blvd., Topeka, Kans.

SMITH AND GILLESPIE
Consulting Engineers
JACKSONVILLE, FLORIDA
An Organization of Experienced Engineers Specializing in Municipal Utilities and Public Works

STANLEY ENGINEERING COMPANY
Consulting Engineers
Hanna Building, Cleveland 15, Ohio
Hershey Building, Muscatine, Ia. · 208 S. LaSalle St., Chicago 4, Ill.

ROBERT H. STELLWAGEN
Consulting Engineers
Municipal and Industrial Waste Problems
Collection, Incineration, Salvage, Pumping, Treatment, Testing
1442 E. Outer Drive, Detroit 34, Mich.

The American City Professional Service Directory

THE STERLING COMPANY

Consulting Engineers

Water Systems — Water Treatment — Sewage System
Sewage Treatment — Airports — Swimming Pools — Paving Plans

10798 St. Charles Rock Road, St. Ann, Missouri

STETSON, STRAUSS & DRESSELHAUS, INC.

Civil & Consulting Engineers

Los Angeles **Oceanside** **Porterville**

Investigations, Reports, Designs, Estimates

Water Supply, Drainage, Sewerage, Municipal Works, Foundations, Materials Testing, Surveying & Mapping

Main Office: 215 W. 7th St., Los Angeles 14, California

ALDEN E. STILSON & ASSOCIATES, LIMITED

Consulting Engineers

Water Supply, Sewerage, Industrial Wastes, Bridges, Highways, Industrial and Power Plant Layout, Materials Handling, Process Layouts, Studies, Surveys and Reports.

245 North High St., Columbia 15, Ohio **75 Public Square, Cleveland 13, Ohio**

SURVEY ANALYSTS OF NEW YORK, INC.

PLANNING AND BUSINESS CONSULTANTS

URBAN PLANNING • TRANSPORTATION STUDIES • PARKING STUDIES
TRAFFIC SURVEY • O&D STUDIES • SITE LOCATION STUDIES
ECONOMIC AND MARKETING SURVEYS • STATISTICAL GRAPHING

1276 E. DELAVAN AVE., BUFFALO 15, NEW YORK **TX 2-0021**

TIGHE & BOND

CONSULTING ENGINEERS

BOWERS AND PEQUOT STREETS
HOLYOKE, MASSACHUSETTS
TEL. JEfferson 3-3991

CIVIL, SANITARY AND ELECTRICAL ENGINEERING
INVESTIGATIONS, REPORTS, PLANS AND SPECIFICATIONS
SUPERVISION OF CONSTRUCTION AND OPERATION

TOLEDO TESTING LABORATORY

Inspection and Testing of Paving and Engineering Materials
Sub-Surface Exploration and Soil Tests

1810 North 12th Street **Toledo 2, Ohio**

Trafficwise Process Co.

520 Fifth Ave. **New York 36, N. Y.**

Methods for progressing heavy traffic in small block cities. Primary-secondary coordination with high conducting power. Systematic coordination between highway and street traffic.

John K. Masten, Consultant, Pats. 3,926,332—3,926,333.

ALFRED H. TULL

Golf Course Architect

COMPLETE TOPOGRAPHICAL DESIGN
UNIT-PRICE SPECIFICATIONS

LARCHMONT, N. Y.
TE. 4-4017

ARNOLD H. VOLLMER ASSOCIATES

Consulting Engineers

Parks — Playgrounds — Pools
Water Supply — Sewerage — Waste Disposal — Air Pollution
Traffic and Parking

25 West 45th Street

Boston **New York** **Louisville**

HAROLD S. PRESCOTT

Consulting Civil Engineer

Design—Supervision
Water Supply—Sewerage—Dams
Subdivision & Industrial Development

594 Main St. **Placerville, Calif.**

Charles C. Redman Jr.

Engineers & Surveyors

Complete Municipal Engineering, Surveying, Mapping and Planning Services.

P. O. Box 62 **Kennett, Missouri**
210 Monroe **Jefferson City, Missouri**

ARTHUR E. ROWE & ASSOCIATES

Municipal Buildings, Swimming Pools, Parking Facilities, Incinerators, Stadia, etc.

8115 Prospect Ave., Cleveland 15, O.

Schmidt Engineering Co., Inc.

Consulting Engineers

Reports, Design, Construction Supervision, Heavy Construction Project, Dams, Hydroelectric, Water and Sewerage Works
Foundation Exploration and Treatment

100 East 10th St., Chattanooga 2, Tenn.

CARL SCHNEIDER

Consulting Engineers

602 Pan American Bldg.
New Orleans 12, La.

Incineration — Sanitary Fills
Reports
Refuse Collection — Sanitation Studies

JOSEPH A. SCHUDT AND ASSOCIATES

Civil Engineers—Surveyors

Surveying, Land Planning Complete Municipal Services
Specializing in Subdivision Development

2451 Western Ave., Park Forest, Illinois

SCRUGGS & HAMMOND

Specializing in small city Planning and Zoning, Landscape Architecture, Parks, Schools, Subdivisions.

330 Central National Bank Bldg.
Peoria, Ill.

New Circle Road, Lexington, Kentucky

Ladislas Segoe & Associates

City Planners—Consulting Engineers

Comprehensive City, County and Regional Plans • Zoning Plans and Ordinances • Traffic and Parking Studies • Shopping Centers and Industrial Parks • Urban Redevelopment and Renewal Projects.

811 Gwynne Bldg., Cincinnati 2, Ohio

John R. Snell ENGINEERS Inc.

221 N. Cedar • Lansing, Mich. • IV 4-9493

Water and Sewage • Industrial Wastes • Refuse Disposal • Highways and Streets • Airports and Harbors • Bridges and Structures • Soils and Foundations • Urban Planning • Research and Development

The American City Professional Service Directory

SOIL TESTING SERVICES, Inc.
Consulting Engineers
John P. Gnaedinger Carl A. Metz
Soil Investigation, Engineering Reports, Inspection, Foundation Design.
1827 N. Harlem Ave., Chicago 35, Ill.
San Francisco; Kenilworth, N. J.; Havana, Cuba; Milwaukee, Wis.; Portland, Mich.

WIEDEMAN & SINGLETON
Consulting Engineers
Water Works, Sewers, Sewage Disposal, Appraisals, Valuations, Reports
760 W. Peachtree St., N.W.
Atlanta 8, Ga.

WILSEY, HAM & BLAIR
Engineers and Planners
Water and Sewage Works
Flood Control and Drainage
Airports, Traffic Studies and Bridges
City and Regional Planning
Utilities Rate & Valuation Studies
800 W. Colorado Blvd. Los Angeles 41
111 Rollins Road, Millbrae, California

James O. Yarger & Associates
Personnel & Management Services
Administrative and Fiscal Surveys ● Position Classification and Salary Plans ● Retirement Systems ● Personnel Ordinances & Regulations
An experienced senior staff for your use
300 Walnut St., Falls Church, Virginia

SOUTHERN MAPPING & ENGINEERING CO.
Consulting Civil Engineers
Planners and Surveyors; Airports and Highway Design; Water Works and Sewage Design; Topography; Tax Mapping Reports and Investigations; Pipe Line Surveys, Acquisition of Right of Way.
216½ Commerce Place, Greensboro, N. C.

WILEY & WILSON
Consulting Engineers
Municipal Planning, Water Supply, Sewerage, Sewage and Waste Treatment, Incinerators, Streets and Pavements, Airports, Light and Power Plants. Reports—Plans—Supervision
620 Court St., Lynchburg, Va.
711 West Main St., Richmond 20, Va.

J. B. WILSON
521 K. of P. Bldg.
Indianapolis 4, Indiana
Sewers, Sewage Treatment, Waterworks, Water Treatment, Gas Systems

J. C. ZIMMERMAN ENGINEERING CO.
Consulting Engineers
Water Supply and Treatment
Drainage—Flood Relief
Sewerage and Sewage Treatment
Planning Design Supervision
11121 West Oklahoma Avenue
West Allis 19, Wisconsin

HENRY B. STEEG & ASSOCIATES
Engineers
Sewage Treatment, Water Supply
Garbage and Refuse Disposal
3338 North Illinois Street
P. O. Box 5052, Station A
Indianapolis 8, Ind.

WAINWRIGHT & RAMSEY
Inc.
Consultants on Municipal Finance
70 Pine Street New York 5, N. Y.

Sydney H. Stilley and Associates
Consulting Engineers
B. W. Kellam, Architect
Studies—Planning—Design—Plans—Supervision—Civil—Sanitary—Structural—Mechanical—Electrical—Industrial
1621 Hendricks Ave., Jacksonville, Fla.
Associate: The Thomas J. Smith Co.
Dusseldorf—Beirut—Jeddah

J. STEPHEN WATKINS
J. S. WATKINS — CONSULTING ENGINEERS — G. R. WATKINS
Municipal and Industrial Engineering, Water Supply and Purification, Sewerage and Sewage Treatment, Highway and Structures, Reports, Investigations and Rate Structures
Main Office:
416 East High Street, Lexington, Kentucky
Branch Offices:
5402 Preston Highway, Louisville, Kentucky
107 Hale Street, Charleston, W. Va.

OSCAR SUTERMEISTER
City Planning Consultant
City and Regional Comprehensive Plans—Planning, Zoning, Subdivision and Housing Laws—Protective Covenants—Industrial Park Design—Performance Standard—Traffic—Urban Defense.
5923 Johnson Ave., Bethesda, Md.
Washington 14, D. C.

LEONARD S. WEGMAN CO.
Consulting Engineers
Refuse Disposal, Water Supply, Sewage Collection & Treatment, Highways, Bridges, Special Structures, Shore Erosion & Waterfront Works
235 East 45th Street New York 17, N. Y.

TIPPETTS-ABBETT-McCARTHY-STRATTON
Engineers and Architects
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Railroads, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Designs, Supervision, Consultations.
375 Park Ave. New York 22, N. Y.

ROY F. WESTON, INC.
Engineers — Biologists — Chemists
Water — Sewage — Industrial Wastes — Refuse
Stream Pollution — Air Pollution — Industrial Hygiene
Surveys—Research—Development—Process-Engineering—Plans and Specifications
Operation Supervision—Analyses—Evaluations and Reports
NEWTOWN SQUARE, PENNSYLVANIA

WESTON & SAMPSON
Consulting Engineers
Hydraulic and Public Health Engineering—Engineering and Laboratory Investigations
Supervisor of Purification Plants
14 Beacon St. Boston, Mass.

WALTER H. WHEELER
Consulting Engineers
Design supervision of Construction, Bridges, Buildings, Parking Garages, Foundations, Coffer Dams, Grain Elevators, Flat Slabs with grillage caps, Special Structures.
802 Metropolitan Building Minneapolis 1, Minnesota

WHITMAN & HOWARD, Inc.
Engineers — Consultants
Municipal Planning, Water Supply, Drainage, Sewerage, Industrial and Municipal Waste Treatment
89 Broad St. Boston, Mass.

GEORGE WIGHT
Consulting Engineers
446 East Main Street
Barrington, Illinois
25 South Washington
Naperville, Illinois

WHITMAN, REQUARDT AND ASSOCIATES
Engineers
Baltimore 2, Md.

WILSON & COMPANY
Engineers & Architects
Water, Sewerage, Streets, Highways, Dams, Bridges, Electrical, Airfields
Chemical Testing Lab—Aerial Mapping—Electrical Computer Services
SALINA, KANSAS WICHITA, KANSAS

Index to Advertisers

Professional Service Directory, 223-233

Aeroil Products Co., Inc. 212
Aeronautical Electronics, Inc. 158
Alabama Pipe Co. 218
Allis-Chalmers 72, 73, 159
American Bitumuls & Asphalt Co. . . . 191
American Geloso Electronics. 47
American Motors Corp. 134
American Steel & Wire Div., U. S. Steel 188, 189
Asplundh Chipper Co. 63
Athey Products Corp. 8
Austin-Western 148, 149
Automatic Signal Div., Eastern Industries, Inc. 145
Automatic Voting Machine, Div. Rockwell Mfg. Co. 192
Avenue Motel 208

Badger Meter Co. 53
B-I-F Industries, Inc. 172
Bossert Hotel 219
Buffalo Meter Co. 44, 45
Buffalo Pipe & Foundry Corp. 197
Byron Jackson Pumps, Inc. 6

Cast Iron Pipe Research Association . 74, 75
Caterpillar Tractor Co. 10, 11, 221
Chase Manhattan Bank. 12
Chevrolet Motor Div. 82, 83
Chicago Bridge & Iron Co. 51
Clark Equipment Co., Constr. Mach. Div. 238
Cleminshaw Co., The J. M. 208
Clow & Sons, James B. 86
Colorado Fuel & Iron Corp. 87
Columbia-Geneva Steel Div., U. S. Steel 188, 189
Cook Well Strainer Co. 18
County Plastics 216
Cummins Engine Co. 156

Dana Corp. 190
Darley & Co., W. S. 219
Davey Tree Expert Co. 81
Dempster Brothers, Inc. 78, 79
Designers Metal Corp. 219
Detroit Stoker Co. 192
Drott Mfg. Corp. 14, 15
Duncan Parking Meter Corp. 133

Eagle Signal Co. 26
Earthworm Boring Machine, Inc. 218
Enterprise Engine & Machinery Co. . . . 176

Fairbanks, Morse & Co., Diesel Div. . . 170
Fitchburg Engineering Corp. 196
Flexible, Inc. 59
Flex-O-Lite Mfg. Corp. 236
Flink Co. 177
Flynn & Emrich Co. 182
Ford Meter Box Co. 215
Ford Motor Co. (Ford Div.) 121-132, 16, 17
Franklin Worsted Co. 180
Frink Sno-Plows, Inc. 180
Fulton Cotton Mills 217

Gamewell Co. 57
Geigy Agricultural Chemicals. 54
General Electric Co., Communication Products Dept. 84
General Electric Industrial Sales Operation. 66
Gledhill Road Machinery Co. 206
Globe Ticket Co. 202
Good Roads Machinery Corp. 208

Halliburton Co. 65
Hamilton Kent Mfg. Co. 136
Harley-Davidson Motor Co. 4
Hayward Co. 206
Holan Corp., J. H. 161
Holiday Shores Motel 218
Hough Co., Frank G. 162, 163
Huber-Warco Co. 237
Hydepak Div. Hobbs Trailer Co. 210

Illinois Stoker Co. 211
International Harvester Co (Drott) . . . 14, 15
Iowa Valve Co. 198

Jefferson Hotel 216

Kasten Mfg. Co. 199
Kennedy Valve Mfg. Co. 71
Kern Instruments, Inc. 222
Kerrigan Iron Works Co. 154
Klett Mfg. Co. 200
Komline-Sanderson Engineering Corp. . 207

Lawter Chemicals, Inc. 203
Layne & Bowler, Inc. 37
Line Material Industries. 42, 43
Lock Joint Pipe Co. 60
Locke Steel Chain, Lawn Mower Div. . 195

M & H Valve Fittings Co. 50
Mack Trucks, Inc. 58
Magee-Hale Park-O-Meter Co. 152
Marbon Chemical Co. 80
Minnesota Mining & Mfg. Co. 76, 77
Miro-Flex Co., Inc. 155
Mitts & Merrill 201
Moline Malleable Iron Co. 194
Monarch Road Machinery Co. 200
Morton Salt Co. 62
Motorola Communications & Electronics, Inc. 35
Mueller Co. 2, 38, 39

National Chemsearch Corp. 24
National Clay Pipe Mfgr., Inc. 52
National Lead Co. 186
Neenah Foundry Co. 209
Neptune Meter Co. 88
Nordberg Mfg. Co. 46
Northern Gravel Co. 200
Northwest Filter Co. 217

O'Brien Mfg. Co. 204
Onan Division, Studebaker-Packard Corp. 64
Opelika Foundry Co. 216

Parsons Co., Div. of Kohring Co. 175
Peabody Engineering. 187
Pettibone-Mulliken Corp. 184
Plymouth Motors Corp. 70
Portland Cement Assoc. 19-22, 40
Preload Co., Inc. 183
Press-Seal Gasket Corp. 85
Price Brothers. 32
Pulsation Controls Corp. 206

Radiator Specialty Co. 206
Reeves Brothers, Inc. (Fibers Division). 28
Revere Electric Mfg. Co. 150
Rid-A-Bird, Inc. 179
Rockwell Mfg. Co. 48, 49
Rolatape, Inc. 167
Ruemelin Mfg. Co. 202

Sicard Industries. 168-169
Smith & Co., Inc., Gordon. 179
Solvay Process Division. 31
Steel Plate Fabricators Assoc. 67
Superior Signal Co. 200
Swenson Spreader & Mfg. Co. 181
Sylvania Electric Products, Inc. 146
Syntron Co. 208

Tarrant Mfg. Co. 202
Tennessee Coal & Iron Div., U. S. Steel 188, 189
Tinker & Rasor. 217
Todd Shipyards Corp. 214

Union Metal Mfg. Co. 142
United Engineering Mfg. Co. 183
United States Steel Export Co. . . . 188, 189

Vapor Blast Mfg. Co. 218
Vermeer Mfg. Co. 183

Wallace & Tiernan, Inc. 69
Warn Mfg. Co., Inc. 159
Wheeler Mfg. Corp. 166
White Diesel Engine Division. 68
Wide-Lite Mfg. Co. 139
Wild Heerbrugg Instruments, Inc. 160
Wisconsin Motor Corp. 185
Wood Co., R. D. 23
Woodward Iron Co. 164

Yeomans Brothers Co. 174
Young Spring & Wire Corp. 213

Here is a plan to help you

REDUCE SUFFERING AND TRAGEDY

With it, your company can SAVE PRECIOUS LIVES, *while* CUTTING COSTS DUE TO ABSENTEEISM *by as much as 1/3 to 1/2!*

Together, American management and labor have done a remarkable job of reducing the incidence of industrial accidents. In-plant safety campaigns have been so effective that today it is *nonwork accidents* that cause the bulk of lost lives and manhours in our economy.

The National Safety Council has developed a plan to reduce these accidents. Not only will it save lives and prevent crippling injuries, but it will add significantly to the efficiency and net profits of companies which put it into operation.

Let's say you're an average company or corporate unit doing $1 million in sales a year. Your net is around $73,000. National Safety Council figures show that the average nonwork accident costs employers about $72. (You can determine *your* costs with the Council's new nonwork accident report system.) Ten such accidents can cost $720—or about 1% of your net profit. Prevent those accidents and you can *add 1% to your net!* Prevent twenty—and add 2% to net!

Experience shows that a reduction of nonwork accidents by 30% is possible! One large company with an excellent in-plant safety record has *cut nonwork accidents by 1/3* with its off-the-job safety program! It's employee's rate for motor vehicle fatalities stands *85% below rate for all U.S. workers!* And its already low *in-plant accident rate came down 50 per cent!*

Here is a rewarding endeavor that pays immeasurable dividends in human and employee relations—as well as an important untapped source for cost control. You can institute this kind of program in your company. Send the coupon for a copy of our booklet "The Challenge to Management of Off-the-Job Accidents." It will show you how to determine your non-work accident costs, as well as many tested ways to reduce this steady waste of lives and profits. Send the coupon today.

I Howard Pyle

HOWARD PYLE
President, The National Safety Council

Published to save lives in cooperation with The Advertising Council and The National Safety Council

SUPPORT YOUR LOCAL SAFETY ORGANIZATION

THE NATIONAL SAFETY COUNCIL
425 NORTH MICHIGAN AVENUE, CHICAGO 11, ILL.

Please send me a copy of your booklet "The Challenge to Management of Off-the-Job Accidents." I want to learn how my company can save lives while cutting costs.

NAME_____

TITLE_____

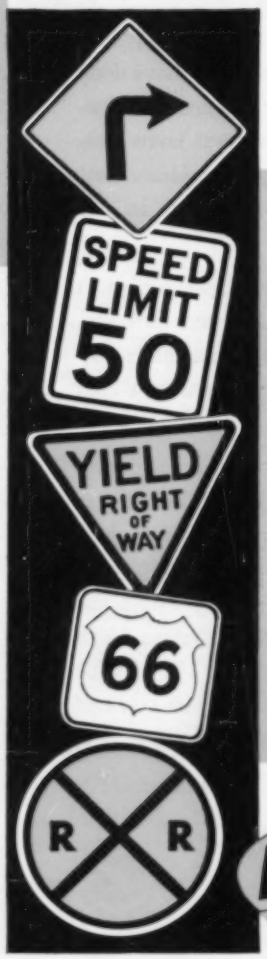
COMPANY_____

ADDRESS_____

Let it Rain . . .
Let it Pour . . .

FLEX-O-LITE REFLECTIVE TRAFFIC SIGNS "PERMANIZED" *with* STORMCOTE®

are CLEARER by DAY . . .
BRIGHTER by NIGHT!

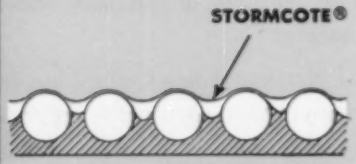


Now thanks to better research and engineering and a whole new concept of sign maintenance, you can have traffic signs and markers that afford unfailing day and night reflectivity under widely varying weather conditions.

Manufactured for outstanding service in the cause of safety, FLEX-O-LITE LEAD-FREE Sign Beads and Bead Binder, when applied as recommended and "permanized" with amazing new STORMCOTE® protective coating, offer improved reflectivity and message legibility at lowest cost.

Why not investigate the money-saving features made possible by the improved materials and application techniques in the FLEX-O-LITE system.

A trial order, subject to your own tests with our sign processing materials kit, will convince you. Wire, write or phone today.



Properly embedded in the binder, FLEX-O-LITE LEAD-FREE Beads, over which Stormcote® serves as a protective film, present an optically uniform surface to assure you of new highs in weather, water, dirt and wear-resistance—coupled with better day and night reflectivity.

FLEX-O-LITE

FLEX-O-LITE MANUFACTURING CORPORATION

8301 Flex-O-Lite Drive, St. Louis 23, Missouri • Paris, Texas
Flex-O-Lite of Canada, Ltd., P. O. Box 216, St. Thomas, Ontario, Canada

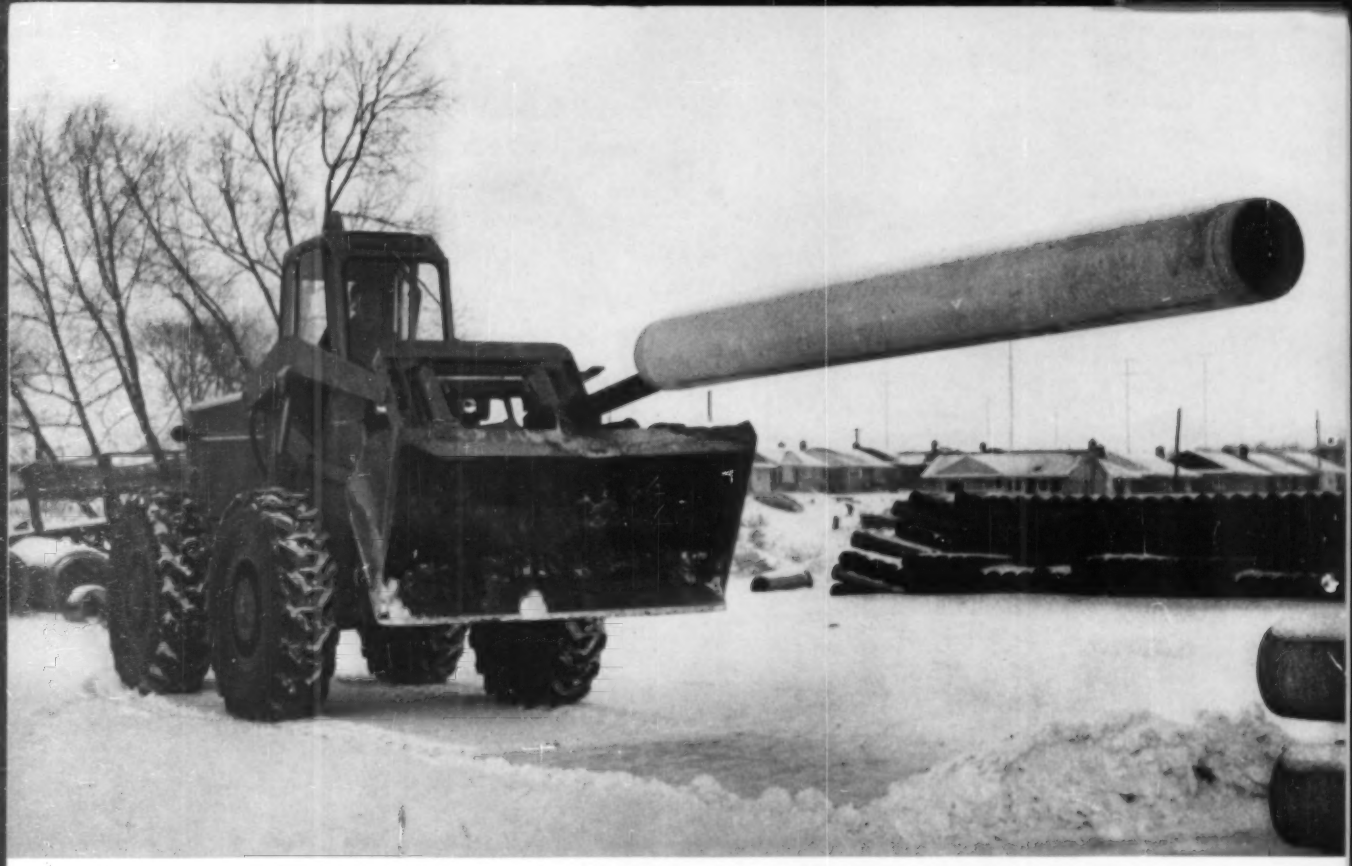
MAKERS OF DROP-ON, FREE-FLOWING, STANDARD, MILITARY, MOISTURE-PROOF, HIGH AND MEDIUM INDEX SIGN BEADS

Strength to spare

In motor graders strength is important. Strength to withstand the shock and strain encountered in the heaviest grading jobs. In Huber-Warco graders the backbone of strength is the frame . . . it assures dependability for any job. Like those on the 8, 9, 10 and 11-D series, this all-welded, low-stress, single-member steel frame has reserve strength built in. Of full box-section design, its two steel channels are boxed together with heavy steel plates top and bottom. These two channels, which separate just behind the saddle, are further reinforced on the inside with heavy steel plates assuring strength to spare for even the most strenuous jobs. What's more, you get better visibility plus extra clearance for blade maneuverability due to Huber-Warco's high-arch design. Investigate these and the other plus features you get with Huber-Warco equipment— motor graders, 3-wheel and tandem rollers, maintainers. Your Huber-Warco distributor has all the details.

HUBER-WARCO COMPANY • MARION, OHIO, U.S.A.

HUBER W WARCO



Michigan gets special boom... city gets low-cost pipe handling

With a unique boom fastened to its 1¼ yd bucket, a mobile Tractor Shovel is handling all pipe lifting and hauling chores for the City of Waterloo, Ontario, Canada.

Costs for this service have been cut substantially, and the need for an excavator crane has been eliminated.

The idea for the special boom was conceived by City Engineer, D. B. Dutton, shortly after the city acquired their Tractor Shovel—a 77 hp Model 75A Michigan! Handling of water and sewer pipe had always posed a problem . . . because it was an occasional job, the full-time crane was an unnecessary expense. However, noting the Michigan's exceptional stability and lift capacity (7,000 lbs), Mr. Dutton saw a way to cut costs both in the material yard and at the trenching site.

Long pipe no problem with Michigan stability

"We welded special brackets to the top of the Michigan's bucket to hold a detachable 5 inch by 10 ft boom," reports Mr. Dutton. "Now, when there's a call for pipe, we simply drive the 26 mph Michigan over from one of its other jobs, attach the boom, lower the bucket, slip the boom into a pipe . . . and drive away. The machine loads both heavy 24″ x 6′ concrete and 14″ x 13′ transite pipe in the yard, and unloads at the site."

Assignments include landfill garbage disposal

This same stability helps the torque-converter-drive Michigan perform a wide variety of other digging and loading assignments for the 16,500 people of Waterloo. For example, the machine travels everywhere under its own power to backfill sewer excavations. It truckloads asphalt, gravel and dirt from stockpiles. It removes stumps and trees. Loads broken concrete. Delivers pre-cast catch basin sections. Clears snow from streets. Loads salt and gravel into spreader trucks. And it handles work on the city's two land reclamation and sanitary landfill projects.

"The Michigan is the most economical machine we've ever operated," Mr. Dutton points out. "After 19 months of five and six day week operations, there has been no downtime or major repairs."

You can expect similar economies when you buy a Michigan . . . plus the added bonus of a large selection of money-saving attachments—street sweepers (with or without sprinklers); backhoes; crane hooks; fork lifts; scarifiers; "V", straight and blower type snow plows; tree transplanters; tampers; a wide variety of buckets. See your Michigan Distributor for a no-obligation demonstration.

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK® EQUIPMENT

2495 Pipestone Road
Benton Harbor 12, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario